

COMPUTERWORLD

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*Computerworld Focus on
Integration.*



Critics pan CA's Masterpiece

BY ROBERT MORAN
CW STAFF

Users of Computer Associates International, Inc.'s Masterpiece financial software have examined the changes that CA announced last June for its Masterpiece 2.0 — and found them wanting.

Attendees at the Masterpiece Users Group in Boston last month said that Masterpiece 2.0 — comprising six modules scheduled for beta testing this

month — will require some users to wait an additional two years to get the extra functionality they have been promised for the last three years.

"A number of companies were badly burned" after making promises to their management based on promises made to them by CA that were not delivered, said Steve Morse, supervisor of general ledger operations at Portland General Electric Co. in Portland, Ore.

"In some ways, unfortunate-

ly, companies have thrown away thousands of man-hours of effort," said Morse, user group steering committee co-chairman for CA-General Ledger. "CA's reputation for being able to deliver products has been severely damaged."

Not quite there

"It is true that of all the things that people would like now, not everything is in the 2.0 release," said Mark Wasilko, marketing vice-president of CA's Financial

and Micro Products Group, last week. However, he and Gary Clayton, a marketing vice-president at the company, said there have been significant enhancements to all modules in speed, performance, functionality and cross-product integration.

Users charge the following:

- Today's Masterpiece CA-Accounts Payable, CA-Purchasing and CA-Accounts Receivable will be scrapped and replaced with older and less functional modules of CA-Advanced Business Solutions.

- The new CA-General Ledger, CA-Fixed Assets and CA-

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A year later, Internet still under attack

*Network security lax
despite worm notoriety*

BY MICHAEL ALEXANDER
CW STAFF

Twelve months after a computer science graduate student allegedly unleashed a worm into Internet — triggering what some have called the computer crime of the information age — security on the nationwide computer network is as lax as ever, according to many computer security professionals and others who are familiar with the network.

In the past year, there have been countless security breaches of computer systems linked to Internet and networks used by federal agencies, research laboratories and other institutions, the experts said. Many of the electronic break-ins exploited the same loopholes that were used by the Internet worm.

As recently as Aug. 16, the Computer Emergency Response Team, based at Carnegie-Mellon University's Software Engineering Institute, issued a security advisory that

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Manufacturers may draft IS expertise

BY ELISABETH HORWITT
and ELLIS BOOKER
CW STAFF

DETROIT — Information systems expertise may be called into the plant-floor loop by executives who have tried and failed to make computer-integrated manufacturing a reality.

Some attendees — but by no means all — at last week's Auto-fact '89 said that after a decade of throwing money at shop-floor automation without garnering the expected paybacks, U.S. manufacturers seem to be re-

casting their CIM strategies in a more business-driven, data-oriented mold.

The incorporation of IS managers into the process will become more crucial as firms focus on such data-related CIM goals as better coordination of work flow, elimination of data rekeying across different functional areas and faster implementation of engineering changes, according to Lee Hales, director of CIM at

Coopers & Lybrand.

The confusion over CIM as it currently exists was illustrated in a survey released by KPMG



Peat Marwick in Chicago. The survey of 1,500 manufacturing companies found that most of the respondents defined the technology as "the use of automation for manufacturing processes."

"This is a very narrow, shop-floor perspective," said KPMG's
Continued on page 143

PATH TO THE TOP

The accidental IS exec

BY CHARLES VON SIMSON
CW STAFF

It is a sweet irony that Robert Umbaugh's journey to the president's chair began because of a computer glitch.

In the late 1950s, Umbaugh was a recent college graduate with a double major in science and English. He applied for a job at Bell Laboratories, and the company's personnel computer abbreviated his major "Sci-Eng."

A group at Bell Labs thought that stood for science and engineering and recruited him into a training program for programmers.



Umbaugh

"Like a lot of people at that time, I got into computers by accident," says Umbaugh, today president of Mission Land Co., a Southern California land developer owned by the corporate parent of utility Southern California Edison. Umbaugh is a member of that rare breed of executive — the career IS professional who has ascended to the top of his company.

"They gave me a Fortran book, and my first program worked," Umbaugh says, referring to his data processing initiation at Bell Labs. "It was up or out in that type of training program, and I was put into an intensive
Continued on page 90

Bank hands keys to IBM

BY CLINTON WILDER
CW STAFF

MEMPHIS — The latest IBM profit-making vessel, IS operations management, has a new port along the Mississippi River. First Tennessee National Corp. recently announced that it will hire IBM to run its data centers for the next 10 years.

Although smaller in scope than the landmark outsourcing agreement between IBM and Eastman Kodak Co. earlier this year, the First Tennessee pact has an interesting twist: IBM will take over the operation of the bank's three Tandem Computers, Inc. CPUs as well as its IBM 3090 Model 400E. IBM resells the transaction processing computers made by Tandem archival Stratus Computer, Inc., but IBM has shown an
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Quotable

"Everyone wants total access, but there has to be a balance between ease of operation and reasonable control."

ELIOT SOHMER
NATIONAL COMPUTER
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On the challenge of dealing with computer viruses. See story page 1.

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EXECUTIVE BRIEFING

■ **Outsourcing continues to make news** as First Tennessee National Corp. taps IBM to run its back-office data centers for the next 10 years. The contract calls for IBM, despite its successful OEM relationship with Stratus, to run First Tennessee's Tandem transaction processing CPUs as well as its 3090. **Page 1.** In another first, IBM may be asked to serve as DEC's subcontractor when Kodak hires DEC later this year to manage its worldwide telecommunications. The proposed scenario would have IBM managing Kodak's extensive SNA network. **Page 8.**

■ **Computer-integrated manufacturing** must step off the factory floor to become an integral part of business strategy, said consultants and IS executives at last week's Autofact show in Detroit. Like many technology innovations, CIM can reach its potential only by crossing corporate functions outside of manufacturing — and that requires intimate participation by the IS department. **Page 1.**

■ **Merrill Lynch** is the latest major user to make a decentralization move as IS boss DuWayne Peterson ceded direct responsibility for three IS divisions to specific Merrill Lynch business units. Peterson retains dotted-line supervision and will continue to oversee policy, strategy and control for the three divisions. **Page 8.**

■ **Overcoming organizational barriers** to change is the key for IS to enable new business processes. Pfizer, Rubbermaid, Ford and Manufacturers Hanover provide four case studies of how they did it. **Page 79.**

■ **Retired Prime CEO Joe Henson** traded in his golf spikes for wing tips and re-joined the industry as chairman of No. 2 independent systems software maker Legent. Henson, 56, will lead Legent in competition against Computer Associates and his own alma mater for 27 years, IBM. **Page 143.**

■ **The stock market turned bearish** on program trading as the NYSE moved to guard against wild market gyrations by restricting computer-based index arbitrage. **Page 4.**

■ **Customers are getting more than lip service** these days as companies recognize the importance of customer service to business success — even survival. Systems built around tightly

integrated databases are playing a key role in strategies designed to gauge customers' desires and respond to their needs quickly. **Page 91.**

■ **On-site this week:** Fault-tolerance has become the life-line at Joseph B. Dahlkemper, a catalog showroom chain in New York, Pennsylvania and Ohio. With the Christmas retail blitz looming, Dahlkemper's two Stratus systems help both IS and business managers sleep peacefully. **Page 29.** The busy season has already gotten under way at mail-order greeting card firm Current, Inc., where the transition to Bull's new DPS 9000 mainframe was smooth and hassle-free. **Page 27.**

■ **Hoopla and hype about hypertext** obscures real strengths and weaknesses. A growing stream of product announcements adds to hypertext awareness. But there is little clear understanding about what the product is good for and what it can do. **Page 107.**

■ **The terms of "shrink-wrap" licenses** for PC software generally are unenforceable, an attorney says. There can't be a contract without an agreement, and there is no agreement to the terms before purchase. However, laws govern use of the software, and there is some value to vendors in issuing the licenses. **Page 134.**

UPDATE

Ah si, ah-so. Accountemps recently surveyed personnel executives from 100 Fortune 1,000 companies, asking which foreign language will be the most important for succeeding in business during the next 20 years. The top choice (44%) was Spanish, ostensibly for dealing with the burgeoning U.S. Hispanic population. A close second was Japanese (33%), followed by French (8%), Chinese (6%), German (5%) and Russian (1%). But, like if they spoke with like some U.S. school kids, like they'd like find that like proficiency in like English might be like a wicked awesome cool idea, too.



It's glitzy, but does hypertext have substance? Page 107.



Patrick Swanick at Fidelity Bank bucks banking's reputation for poor service with a system that caters to customer needs. Page 91.

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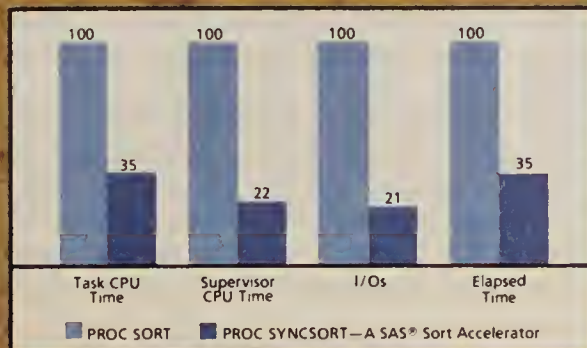
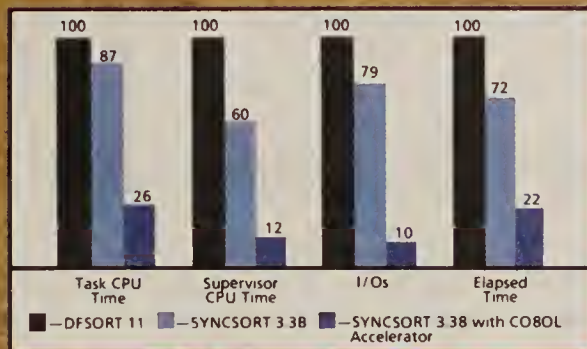
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Stock in program trading drops

BY JOANIE M. WEXLER
CW STAFF

Program trading may have reached a point of diminishing returns, as the bearish view of influential Wall Street clients last week prompted several investment firms to retreat from the suddenly controversial practice of using computers to buy and sell massive blocks of stocks.

In response to the outcry, the New York Stock Exchange (NYSE) Thursday requested that its member firms voluntarily refrain from program trading for their own accounts and that they also ask their customers to use discretion with the practice. The NYSE also placed limits on its Designated Order Turnaround (DOT) and Super DOT electronic ordering systems to trigger transaction delays of up to 60 minutes.

A wave of opposition to a computer-assisted trading strategy known as stock-index arbitrage, which takes advantage of fleeting discrepancies between prices in the stock and futures markets, has built steadily since it was pegged by critics as partially responsible for the 190-point plunge in the Dow Jones industrial average Oct. 13.

The ability to capture a brief window of buying/selling opportunity is facilitated by the use of computers, which can be programmed to continually evaluate

various market conditions and automatically generate transactions when a predetermined set of criteria is present.

In the case of index arbitrage, "baskets" of transactions — such as the buying or selling of shares from the entire Standard & Poors 500 stock index — are bought in either the stock or futures market, whichever is less

the aid of computers, because most of the momentary opportunities would be missed. "If there were a rule that no order got executed until 48 hours after it was placed, I could almost guarantee that the wide fluctuations would not happen," McDonald said.

Some investors have been threatening to boycott securities firms that practice index arbi-

chief investments officer at Penn Mutual Life Insurance Co.

Before Thursday's NYSE announcement, several securities firms, including Kidder, Peabody & Co., Bear, Stearns & Co. and Morgan Stanley & Co., had already pulled back from index arbitrage for their own accounts, and Merrill Lynch & Co. had announced that it would cease the practice altogether.

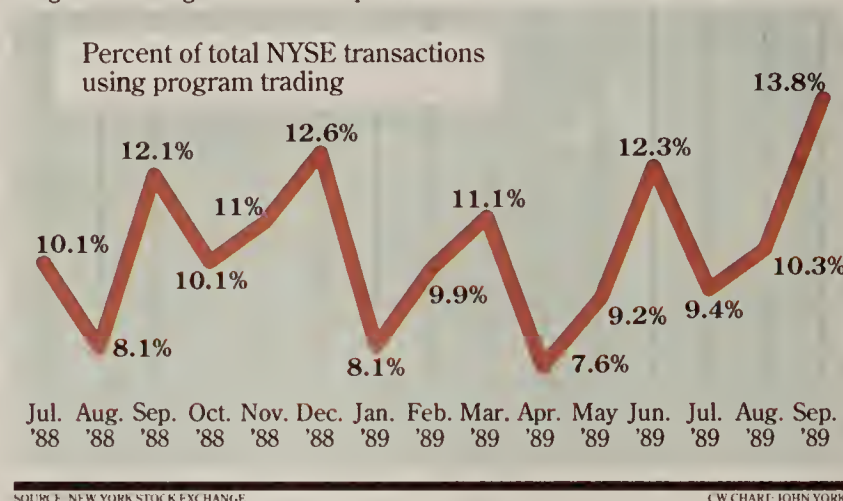
Ferdinand did acknowledge that some of the recent volatility being attributed to index arbitrage is not appropriate. He explained that there is a whole cross-current of conditions at play in the market, including more aggressive selling by institutional investors.

A member of a securities firm who was an early implementor of the index arbitrage strategy said that while index arbitrage is facilitated by the DOT system, the people pushing the buttons — not the system itself — are really to blame for any misuses.

"The information computers provide keeps us honest," said Jeff Miller, managing partner of Miller Tabak Hirsch + Co. "Without computers, there would be lots of inefficiencies in the marketplace, because there would be no price information, and insiders would benefit." Market fluctuations have more to do with trading behavior than with computers, Miller said. Some traders, he said, are "trying to scare the market and benefit by waiting until prices drop before buying on the other side."

NYSE trading

Program trading has been an up-and-down business on Wall Street



expensive, and sold in the more expensive one.

While computers may not be entirely to blame for trading activities that upset the market, Robert McDonald, an associate professor of finance at Northwestern University's Kellogg School of Management, said that the quick buying and selling behavior would not exist without

trade because they believe that it contributes to more volatility in the market than would otherwise exist, which they conclude can have a negative impact on their investment activities.

"The added volatility creates an air of uncertainty and instability that detracts from equity investing," said William V. Ferdinand, senior vice-president and

outdated hardware, old data and faulty communications links, echoing an audit by the U.S. General Accounting Office (GAO).

CIMS is supposed to be a worldwide marketing database management system, full of market research reports and foreign contacts that would help small and medium-size businesses export their products.

A low CIMmer

However, the GAO audit found that CIMS is not extensively used in many U.S. and foreign posts because data entry is too difficult, data retrieval too slow, and communications with the Wang Laboratories, Inc. VS

minicomputer in Washington, D.C., is often disrupted by line static.

For example, the GAO found that at the Charleston, W.Va., office, it took almost eight hours to retrieve 15 test files from the central database and store them on Wang personal computers; in the Tokyo office, 95% of the CIMS records had not been updated in four years.

Barnes said that the fundamental problem with CIMS is that it has never been clear exactly what business mission CIMS was to perform. Some officials wanted an analytical tool for trade counselors, whereas others wanted to give businesses direct access to the database.

CIMS not worth a cent; system revamp planned

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — The U.S. Congress had been counting on the Commercial Information Management System (CIMS) to help put a dent in the U.S. trade deficit, but there is unanimous sentiment that the system is virtually worthless.

After 11 years, three different acronyms and \$35 million spent on the export-promotion system, "CIMS is not working," declared Sen. Jay Rockefeller (D-W.Va.) at an oversight hearing last week.

"I've got a tiger by the tail here," said Janet L. Barnes, the new director of CIMS, in an interview last week. Formerly chief information officer at the Pension Benefit Guaranty Corp. [CW, Aug. 1, 1988], Barnes has the challenge of turning around a troubled system that has the attention of U.S. senators and Commerce Secretary Robert Mosbacher.

A major problem is that the system, which was developed in

piecemeal fashion, uses three different types of software. "We have three very different environments to manage and maintain. That doesn't make a lot of sense, especially when budgets are tight," Barnes said.

"CIMS is a system with a multitude of problems," testified Susan C. Schwab, the new director general of the U.S. and Foreign Commercial Service. According to Schwab, the problems include cumbersome software,

On federal agenda: Items mired in red tape

WASHINGTON, D.C. — It is usually tough to get a handle on exactly what the whole federal bureaucracy is doing at any given time. However, last week, the U.S. government published its semiannual list of the regulations creeping through the bureaucratic pipeline at 55 agencies.

In the computer field, for example, the Federal Register's Regulatory Agenda lists the fol-

lowing major proceedings:

- Sometime this month, the Food and Drug Administration plans to issue its final policy on how it will regulate computer-aided medical devices and diagnostic equipment.
- By the end of the year, the Federal Communications Commission plans to revisit the controversial topics of deregulating AT&T and extending "price caps" regulation to the local ex-

change carriers.

- Next year, the Department of Transportation will conduct a comprehensive review of the regulations governing airline reservation systems.

Also, the Bureau of Export Administration is working on a definition of a supercomputer and believes it has settled on a peak performance of 100 million floating-point operations per second or more.

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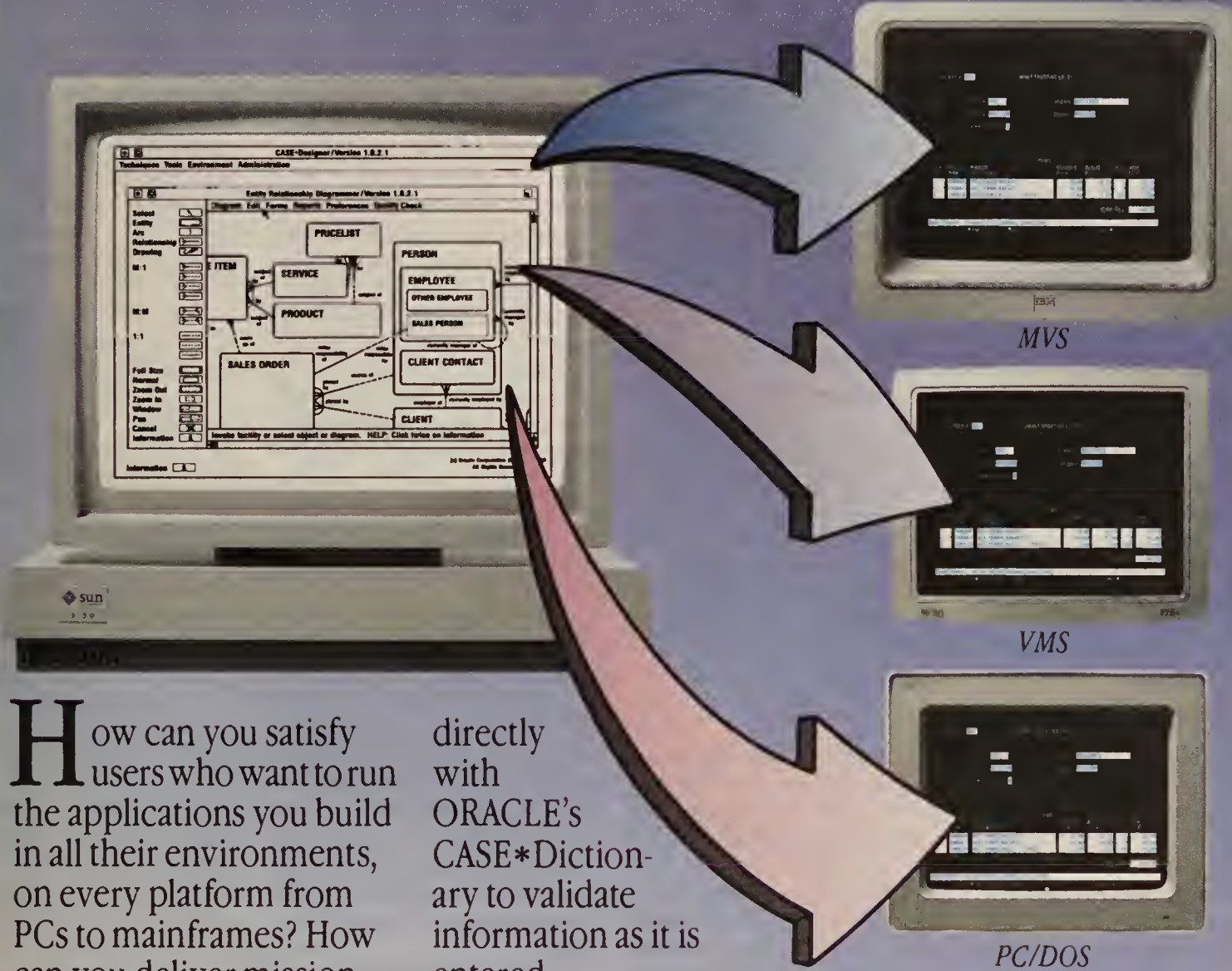
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	Syracuse	Dec 13mpa
OH	Beachwood	Dec 13cf
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WI	Madison	Nov 9

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COMPUTERWORLD

On-line tax plans raise format fears

BY MITCH BETTS
CW STAFF

Several efficiency-minded state governments are now requiring corporations to send their tax payments electronically, but corporate information systems departments are worried that they will soon be faced with the nightmare of 50 different formats for remittance data.

"A couple [of formats] we can handle. It's the nightmare down the road that we want to prevent," said Dick Drewelow, manager of IS quality improvement at Shell Oil Co. in Houston.

Just in the nick of time, the Federation of Tax Administrators and other groups are working on a standard format for electronic tax payments that they anticipate will be adopted by all of the states and the Internal Revenue Service.

Large-scale electronic payment programs are already under way in Indiana, New Mexico and Idaho. Currently, a corporation that operates in both Indiana and New Mexico, for example, must use different formats for remittance data.

"The cost is more programmer time to support those [multiple] formats, at a time when we're trying to improve the productivity of our staff and work on more strategic types of systems," said Drewelow, who is

lem is that states have come up with different formats for the 80-character addendum that accompanies the payment and provides taxpayer information.

Recognizing the looming problem, the Federation of Tax

Taxes by wire

At least 10 states will require corporations to pay state taxes by electronic funds transfer next year, and many more states are on deck



SOURCE: FEDERATION OF TAX ADMINISTRATORS

CW CHART: DOREEN DAHLE

also chairman of the Petroleum Industry Data Exchange.

The electronic payment itself uses the Cash Concentration or Disbursement Plus Addendum (CCD+) standard developed for the government by the National Automated Clearing House Association (NACHA). The prob-

Administrators has launched an effort to standardize the addendum, said Jonathan Lyon, senior staff associate at the Washington, D.C.-based organization.

Lyon said that the tax administrators, working closely with NACHA and other parties, have settled on the proper placement

of the taxpayer identification number, tax type and other pertinent data along the 80-character addendum.

He said the standard will be ready for use by the end of the year and will be formally adopted by NACHA in the spring. Existing state electronic funds transfer (EFT) programs are expected to switch to the standard format, and the six states that will launch EFT programs in 1990 will adopt it as well, Lyon said.

Lyon said that some states would prefer to get more taxpayer information than the 80-character addendum allows. "We're trying to convince them that all the information they need is the limited amount of data you see on a check," he said, stressing that electronic tax payments are separate from electronic filing of the complete tax return.

Several sources expressed relief that the standard is arriving before a crisis hits, but the selection of CCD+ has not pleased the electronic data interchange (EDI) community, which is devoted to the ANSI X12 standard.

Bill Cafiero, senior EDI consultant at General Electric Information Services, a unit of Gener-

al Electric Co., complained that yet another special version of CCD+ is being created to handle transactions that could be handled by ANSI X12.

However, Cafiero conceded that adding one tax format is better than adding 50 formats for each state. "I understand why they did this. They are pressured for time. But like many of the things you do for expediency, eventually you have to go back and rework it," he said.

Defenders of CCD+ said it is an interim standard that can be easily migrated to an EDI-compatible standard in the future. Also, an ANSI X12 payments task group has agreed to write a guide for translating ANSI X12.4 transactions into the CCD+ format.

Robert Barr, manager of information resource services for the South Carolina Tax Commission, said that banks handling corporate tax payments will eventually use NACHA's Corporate Trade Exchange (CTX) format, which is compatible with EDI software.

CTX was not selected initially as the tax standard because very few banks support CTX, whereas thousands of banks have adopted CCD+, Barr said.

Internet

FROM PAGE 1

warned: "Many computers connected to Internet have experienced unauthorized system activity... over a period of several months, and that activity is spreading."

An unidentified hacker had surreptitiously substituted the Telnet program — used to establish connections between computers — on several computers with a version that enabled the hacker to record the user name and password of everyone logging on to the computer. The hacker was then able to penetrate several other computers using the user names and passwords, CERT said.

CERT was established soon after the Internet worm attack by the U.S. Department of Defense — whose Arpanet and Milnet are among the largest networks on Internet — to help systems managers cope with security breaches.

A spokeswoman for CERT refused to say precisely how many times the group has been called in to help systems managers cope with security problems but acknowledged that CERT is "always involved in what are mostly minor things."

Security on the Internet has been under intense scrutiny since last year's worm attack.

The malicious code was allegedly created by Robert T. Morris Jr., then a 23-year-old computer science graduate student and son of one of the U.S. gov-

ernment's top computer scientists.

(Morris, who was suspended from Cornell University following the incident, was indicted in July on a single felony count under the Computer Fraud and Abuse Act of 1986. Last week, a federal magistrate in Syracuse, N.Y., denied motions to dismiss the indictment and set a trial date for Nov. 29.)

"Poor security practices contributed to the spread of the virus on Internet last year, and

those practices are still there," said Eliot Sohmer, chief of the office of standards and commercial product evaluation at the National Computer Security Center. The center is a branch of the super-secret National Security Agency that focuses on computer security. "Everyone wants total access, but there has to be a balance between ease of operation and reasonable control," he said.

Internet systems managers, especially at universities, hesi-

tate to adopt stricter security measures for fear that their systems will become too unwieldy or difficult for end users, said Eugene Spafford, an assistant professor in the department of computer science at Purdue University.

"The problem with security is not the network itself," Spafford said. "What's needed is a heightened awareness of what security is all about at the individual sites."

In many instances, systems

managers also lack the technical skills required to close loopholes in Unix, the predominant operating system run by computers on Internet, said Clifford Stoll, an astronomer and computer security expert at Harvard University's Smithsonian Center for Astrophysics.

"Unix desperately needs to be re-examined and rewritten," Stoll said. "There are too many holes in Unix, and it needs to be easier for systems administrators to secure."

It's ba-a-ack: 'No Nukes Worm' haunts Internet

What had been feared came to pass last week with the return of the "No Nukes Worm" on the Decnet Internet, a worldwide network that links computers at government agencies, research centers and other institutions.

For the second time in three weeks, a worm carrying an antinuclear message infiltrated the Decnet-based network, this time penetrating an estimated 300 Digital Equipment Corp. VAX/VMS sites worldwide in only a few hours.

The Decnet Internet is an amalgamation of several national and international wide-area networks, including the National Aeronautics and Space Administration's (NASA) Space Physics Analysis Network (SPAN).

Although the worm did not damage files, it had serious side effects, said Ron Tencati, SPAN security manager at NASA's Space Applications Research in Lanham, Md.

"It seems that the only way to combat it will be to inoculate every computer on the network," Tencati said. SPAN's security team has developed a vaccine that it expects will finally exterminate the worm from the network of some 13,000 computers.

"Hopefully, our vaccine will cause the worm to abort during its attack," Tencati said. "We stopped seeing reports of the worm on Oct. 20, but last Monday, we saw a new strain of the worm."

Even sites that resist the attack are vulnerable because the worm was designed to repeatedly hammer a system, generating

hundreds of log-in failure messages and consuming large amounts of disk storage space, Tencati said.

The unruly program is a slightly modified version of a worm that struck some 60 computer systems on the Decnet Internet between Oct. 16 and 20 [CW, Oct. 23]. Following that attack, officials at the U.S. Department of Defense-sponsored CERT warned users that the worm had left "serious security holes." CERT also said many copies of the worm had been sent through the network and that "someone could launch this worm into any Decnet-based network."

An unidentified programmer did precisely what CERT predicted: The worm was "tweaked" and sent off again to carry out its mission more efficiently, Tencati said.

The worm was designed to penetrate systems through accounts that had the same user identification and password and through the default Decnet account called Task Object 0. If successful at cracking the password, the worm changed the system banner to display a message that read in part, "Worms Against Nuclear Killers."

NASA officials said they believe the worm was created to protest the Oct. 20 launch of the *Atlantis* space shuttle, which carried a plutonium-powered probe on its first leg of a mission to Jupiter.

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NEWS SHORTS

Forecast trips Compaq stock

Compaq Computer Corp.'s report that fourth-quarter earnings will be lower than projected sent its stock price into a 16½-point tailspin Thursday. Compaq blamed a slowdown in the U.S. market, limited new-product availability and the uncertainty of the Intel Corp. 80486 chip. Coupled with its earlier discovery of I486 flaws, the latest news casts a chill on Compaq's hotly anticipated I486-based personal computer premier, slated for today.

Investment firm works on image

The Putnam Companies of Boston last week claimed to be the first financial services firm to install the mainframe version of IBM's image-processing system, Imageplus. Putnam, which said it decided two years ago to pursue a paperless business environment, has 40 workstations and an IBM 3090 Model 200S supporting the image application in its Shareholder Priority Processing Department.

Sun's Lacroute rises at Dynabook

Former Sun Microsystems, Inc. Executive Vice-President Bernie Lacroute has resurfaced as chairman, CEO and president of Dynabook Technologies, the San Jose, Calif., start-up co-founded by another Sun alumnus, Vinod Khosla. Dynabook entered the crowded portable computer field earlier this year with an Intel 80286-based model. Lacroute is also expected to continue with the venture capital firm of Kleiner, Perkins, Caufield & Byers, which is also a major investor in Dynabook.

Treasury seeks to starch laundering

The U.S. Department of the Treasury last week announced plans to regulate international electronic funds transfer as part of an attack on money-laundering schemes. The agency said it may require banks to keep records of the parties involved in international wire transfers and report suspicious transfers.

Unix venture for Borland

Borland International announced an agreement last week with Mountain View, Calif.-based Hunter Systems Software to port several Borland applications to Unix. Hunter will use its porting system, XDOS CAPS, to develop XDOS versions of Borland's Quattro spreadsheet and Sprint word processor. Borland's DOS-based products will then be compatible with any Unix system running under Hunter System's XDOS Translator product, according to the companies.

PC support for AS/400 software

Native Software, Inc. in Richmond, Va., has introduced APC/400, which is said to enable users of IBM Application System/400, System/36 or System/38 to move applications to a personal computer. The PC can also be used as a programmer workstation to develop applications before moving them back to the larger systems. Pricing starts at \$2,195 for a single-user development system, with runtime environments available for \$695.

Pacbell does ISDN

Pacific Bell last week joined the thin but slowly swelling ranks of regional holding companies that have announced local Integrated Services Digital Network services. Pacific Bell plans to offer a Centrex-like ISDN service that will transmit voice, data and video among sites served by the same central office.

EISA Token-Ring premiers

UK-based Madge Networks has unwrapped what it claimed is a Token-Ring performance breakthrough with a Smart 16M/4M Extended Industry Standard Architecture (EISA) node. The product reportedly transmits data at 33M byte/sec., which is the maximum speed of the EISA bus. The same technology will be applied to boost IBM's Micro Channel Architecture bus.

IBM may back up DEC in Kodak telecom deal

BY CLINTON WILDER
CW STAFF

ROCHESTER, N.Y. — IBM as a Digital Equipment Corp. subcontractor? Such a relationship between the industry's two biggest rivals could happen in Eastman Kodak Co.'s telecommunications operation.

Kodak, already the talk of the information systems management community for its outsourcing of IS operations to IBM, is currently negotiating with DEC to take over many of its telecommunications functions [CW, Oct. 30]. Although DEC will be the lead partner, Kodak is considering expanding its current agreement with IBM to have IBM manage the large Systems Network Architecture (SNA) component of its worldwide networks.

Under this scenario, a large number of Kodak telecommunications professionals would become DEC employees, but some of Kodak's SNA specialists would become IBM employees. IBM hired approximately 300 Kodak IS workers when it assumed management of Kodak's Rochester data centers last month.

Dealing with the SNA network in a DEC management environment "was an issue, but we're working with both [vendors], trying to craft a special arrangement," said Alan Chase, a group manager in Kodak's corporate IS organization. "They would not be running into each other's proprietary concepts.

We're trying to maximize everyone's best interests."

SNA supports most of Kodak's core administrative and financial applications as well as an IBM Professional Office System (Profs) electronic mail network that supports more than 10,000 users. DEC's Decnet supports most manufacturing, engineering and research applications.

"Our architecture goal is to have a network that is far more open than either Decnet or SNA," Chase said. "We think that having both players, both committed to moving to open architecture, will enhance our ability to get there even quicker."

Kodak's telecommunications partnership with DEC, code-named Telstar, will be for at least five years and possibly as long as 10 — the same duration as the IS partnership with IBM. Chase said the Kodak negotiating team hopes to have an agreement to recommend to Kodak executives by mid-December.

The telecommunications partnership will most probably include a major long-distance carrier — AT&T, MCI Communications Corp. or U.S. Sprint Communications Co. Rochester Telephone Corp. will continue as Kodak's vendor of local voice networks and other services.

Kodak is aware that shifting employment from Kodak to DEC may be a greater cultural change than the move from Kodak to IBM. "Many people have worked for Kodak longer than DEC has been in business," Chase said.

Merrill Lynch disperses IS management

BY DAVID A. LUDLUM
CW STAFF

NEW YORK — Merrill Lynch & Co. last week decentralized the management of three information systems organizations, tying them more closely to the business activities they support.

The three units, which already were dedicated to the business areas, had reported directly to DuWayne Peterson, Merrill Lynch's executive vice-president for operations, systems and telecommunications.

Peterson continues to oversee policy, strategy and control for those three functions and will exercise "dotted line" supervision of the reassigned units. He also retains direct supervision of

the Global Information Services Group that runs data centers and telecommunications, the revenue-generating Teleport Communications subsidiary and a Management Science unit.

Effective last Tuesday, Merrill Lynch assigned its Global Operations Division to the Capital Markets Group, the trading, investment banking and international finance unit for which it provides technological support.

The company reassigned two other divisions — Financial Services and Field Operations and Systems Support (FOSS) — to the Consumer Market Group. Financial Services, located in Somerset, N.J., provides centralized support for such consumer products as trust services. FOSS runs systems for the 480 retail branch offices.

In a prepared statement, Peterson said the changes will forge a stronger partnership between the support units and users and allow technology issues to assume a greater role in management of the businesses.

Bank

FROM PAGE 1

increasing willingness to manage multivendor environments in seeking a reputation as a provider of any type of IS services. As part of the contract, IBM will replace terminals in First Tennessee's branches and loan offices with 1,700 IBM Personal System/2s by April 1991.

The move will cost 70 to 90 First Tennessee IS employees their jobs. IBM will hire between 30 and 50 of the 120 First Tennessee operators, communications specialists and technical services professionals that will be affected. IBM and the bank will provide outplacement services to those not retained.

First Tennessee's entire IS function, including a large operation that processes checks for other banks, employs about 900 people. First Tennessee will retain control of its 100 applications developers and the check-processing business.

Lower operations costs and faster implementation of key IS technology motivated the decision to outsource, said John Kelley, First Tennessee's executive vice-president and corporate services group manager. With \$6 billion in assets, First Tennessee is the 80th largest commercial bank in the U.S. and second in Tennessee behind Nashville-based First American Corp.

"To compete against larger banks, we either had to become part of a larger bank or find a technology partner," Kelley said. "IBM will provide the technology that we need to compete, and they will help us cut costs."

First Tennessee had a five-year plan to replace its teller and loan officer terminals with intelligent workstations; Kelley noted that IBM's PS/2 installations will accelerate that change. The contract "will also allow us to spend more time on the strategic part of our jobs than the actual operating part," he said, echoing many IS executives who have opted for outsourcing.

Kelley said that IBM's contract price, which he did not disclose, offered "substantial" savings over First Tennessee's 10-year projections of IS operations costs, with most of the savings in personnel expense. IBM will also cut costs by removing two 4381s from the data center, transferring the processing to the 3090.

First Tennessee will take a one-time charge of \$4 million in the fourth quarter for severance payments, equipment write-downs and negotiating costs.

First Tennessee will not farm out the operation of its First Express business check-processing service.

Outsourcing to IBM is part of First Tennessee's overall belt-tightening effort to hold noninterest expenses at current-year levels in 1990.

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Wang may slash work force again

BY NELL MARGOLIS
CW STAFF

LOWELL, Mass. — Reports late last week that Wang Laboratories, Inc. will announce a 2,500-person work-force cut when company president Richard Miller details the firm's

comeback plans later this week drew an enthusiastic response from those who believe that drastic surgery is required if the company is to survive.

Steve Wendler, an analyst at Gartner Group, Inc. in Stamford, Conn., said the number of layoffs — approximately 10% of

Wang's total work force of some 25,000 — would not surprise him and will not go far enough.

"What's really needed for the financial health of the company is a slimming down to about 20,000," Wendler said. "The trick is how to do that without affecting either the short- or long-

term viability of the company."

The reports will be neither confirmed nor denied until the scheduled Nov. 9 announcement, said a Wang spokeswoman. Wang issued a statement calling a story on the layoffs in a Boston newspaper "both speculative and premature," stating that it did not come from a source within the company.

"Rick Miller has consistently

said both internally and externally that further action was needed," the statement said.

Clement Kichuk Jr., vice-president of Westport, Conn.-based MIS Marketing Corporation of America, a heavily invested Wang user, said that he expects and hopes that the layoff rumors are true.

"What is really key to me is their technology," Kichuk said. His company, an approximately \$200 million consulting company and conglomerate, handles the data processing for all of its holdings on Wang computers, using Wang software as well.

"The decision to go with Wang has been an incredibly good one for us; we get our work done with just over 30 people, and I know it would be three or four times that without Wang," Kichuk said. MIS Marketing, he added, is also relying on Wang's promised strides into imaging.

The prospect of further major layoffs at Wang, from which some 5,000 employees have already departed this year, is discomforting from some points of view, Kichuk admitted. "I can see days coming when we'll call and there won't be anyone there to answer us, or not as soon as we'd like," he said.

The net result, he said, will be worth temporary setbacks. If the predicted layoff happens, "It will send a very important message to the customers: that Wang is doing what it has to do to be there for them in the future."

Lotus fixes display glitch

CAMBRIDGE, Mass. — Users attempting to run Release 3.0 of Lotus Development Corp.'s 1-2-3 spreadsheet under OS/2 Version 1.2 may find themselves fading to black, courtesy of a minor difference in display drivers between the two versions of OS/2 Standard Edition.

Release 3.0 runs fine on OS/2 Version 1.0. "As I understand it, the screen goes black" when users try to upgrade to OS/2 Version 1.2, said Chuck Sullivan, senior product manager of Release 3.0.

"There was a small change in the internal specifications for the display driver or screen stack size [memory allocation] that was changed. This caused some of our display drivers in Release 3 to not work properly," Sullivan explained. He described the glitch as a routine maintenance problem. "It has never caused data loss or affected any data application," he said.

Lotus will make an update driver disk available this week, free of charge, through its customer purchase centers. Users must call the center to get a disk mailed to them.

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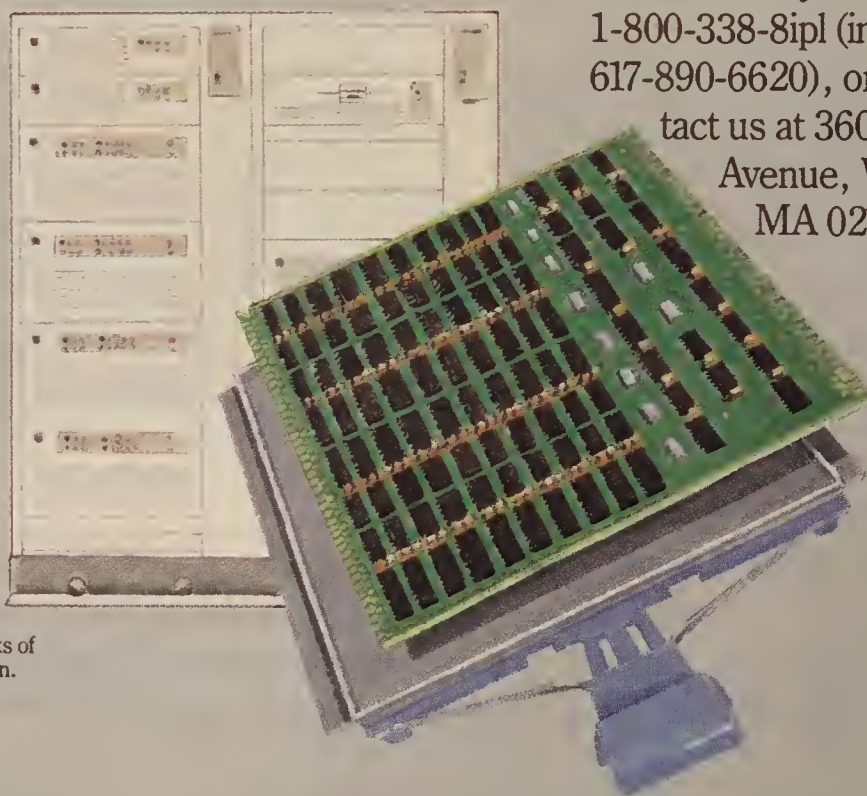
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Microvax to tie into Token-Ring

BY MARYFRAN JOHNSON
CW STAFF

ANAHEIM, Calif. — A direct, high-speed connection between Digital Equipment Corp. Microvaxes and IBM computers via Token-Ring interface will be un-

veiled this week by a third-party vendor.

San Diego-based Simpact Associates, Inc. will reportedly announce its TCI 2000 series of Token-Ring interfaces, hardware and software products at the Dexpo West '89 trade show.

The products reportedly will allow any DEC Microvax to be connected directly to Token-Ring, the increasingly popular IBM networking standard. Until now, DEC has relied on Ethernet as its networking connection, with links to IBM systems only

through complicated gateway arrangements.

"This sounds like the first step toward a reasonable solution," said Katherine Barrett, a manager in network consulting at Ernst & Young in Fairfax, Va. "There's no question that being able to put a VAX on a Token-Ring will make everybody's life simpler."

Each interface in Simpact's

TCI series consists of an intelligent communications front-end processor and software that implements one of the four protocols commonly used in the Token-Ring environment: Logical Link Controller (LLC), Transmission Control Protocol/Internet Protocol (TCP/IP), IBM-compatible Netbios and IBM's LU6.2.

Another vendor, Systems Strategies, Inc. in New York, will also announce LU6.2 Token-Ring support to its Ezbridge line of IBM-to-DEC connectivity software. In a marketing agreement between the two companies, Simpact provided its hardware as a platform for Systems Strategies' software.

David Terrie, president of Newport Consulting in Scituate, Mass., said, "Token-Ring products [for DEC machines] are not new, but what is different here is the range of protocols being supported directly by the board."

The 2000 series consists of four versions, each handling one of the major software protocols.

The TCP/IP version will require little or no customization by users, said Steve Adams, a Simpact spokesman. The LLC, Netbios and LU 6.2 interfaces, however, are intended for use as development tools by systems integrators, who "will have to do some programming themselves," Adams said.

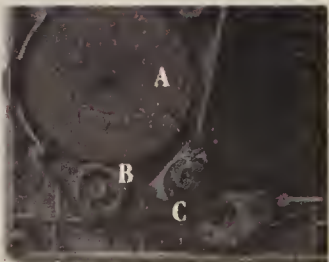
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Vaxstations head list of DEC debuts

MAYNARD, Mass. — Digital Equipment Corp. will flesh out its Vaxstation line with the introduction of two general-purpose models this week, along with a raft of enhanced software and networking products for technical and commercial markets.

Sources close to the company report that 16 products — several aimed at desktop integration in a multivendor environment — will be unveiled at a press conference Tuesday at Boston's World Trade Center.

In a demonstration of new interoperability skills, DEC officials will pass along and print out several files between an Apple Computer, Inc. Macintosh and DEC machines from both the Vaxstation line and the reduced instruction set computing-based "open systems" Decstation line.

Also making its debut will be three RT (real-time) Vaxstations, one based on the 3300 line and two based on the Vaxstation 3100.

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3Com announces stopgap network measures

BY CHARLES VON SIMSON
CW STAFF

SAN JOSE, Calif. — Acknowledging that a mature integration of multivendor network operating systems is years away, 3Com Corp. faced impatient customers and announced a slate of interim capabilities last week that will allow them to better develop their own management systems.

Although corporate managers applauded the direction, most expressed impatience with the development of answers for their problems.

3Com issued a statement of intent to

offer a series of network management applications that will give managers a greater degree of information on network functions across multivendor environments. The announcement came at 3Com's Network Systems Forum, a marketing conference held here. The products, elements of the company's Open Management Architecture, are scheduled for delivery by summer 1990.

"Part of the problem is definitely the development of standards and technological hurdles," said Brian Steele, a network systems analyst at Citgo Petroleum Corp. in Tulsa, Okla. But, he added, "There is also a large measure of politics and mar-

keting getting in the way. Until vendors develop a real solution, we will grow a lot of capabilities internally and stay away from proprietary systems."

In response to such sentiments, 3Com also announced that it will design and publish application programming interfaces that will allow systems administrators to develop applications for their specific environments. Icon-driven statistical and technical network reporting functions were demonstrated at the forum.

"For most heterogeneous campus LANs, the solutions are the worst possible mess you can imagine," said Steve Spanier, vice-president at Infonetics,

Inc., a Santa Clara, Calif., market research firm that recently completed a study of heterogeneous campus networks. "You will only see more users forced to grow their own."

In addition, the company announced network software allowing Apple Computer, Inc. Macintosh computers to directly access file and print services on a 3+Open LAN Manager network using Apple's Appletalk Filing Protocol and Printer Access Protocol.

Apple users were cautiously optimistic. "They will have to offer a far greater comfort level before I move critical applications off of our HP 3000 systems onto a network," said Ed Rogers, MIS operations manager at Adia Personnel Services in Menlo Park, Calif.

Brout route

3Com was not idle on the hardware side of the business last week, demonstrating an Ethernet brouter that, functioning as a router, will direct three major protocols.

Depending on requirements, the BR/2000 can operate as a protocol-transparent bridge; as a brouter supporting Xerox Corp.'s Xerox Network Systems, Transmission Control Protocol/Internet Protocol and Open Systems Interconnect protocols; or as a brouter for routing supported protocols and bridging all others.

The bridging function provides internetworking support for all protocols not configured to be routed. Analysts said this can be an important function for network managers developing internetwork communications between devices using protocols that were not designed to be routed, such as IBM's Netbios and LU6.2 protocols.

Data General boosts revenue

WESTBORO, Mass. — Just as it predicted last month, Data General Corp. last week reported the highest quarterly revenue in the organization's 21-year history for its fourth quarter, which ended Sept. 30.

The firm said strong sales in both the proprietary MV computer line and the fledgling Unix-based Avion line boosted revenue to \$357.1 million, up 4.6% from last year's fourth-quarter figure.

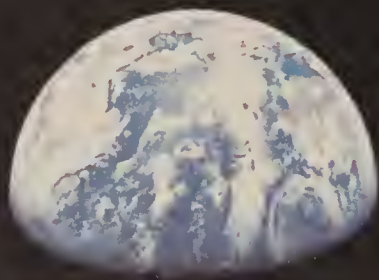
An \$84.1 million loss for the quarter, including an \$80 million restructuring charge, compared with a \$49.8 million loss in last year's fourth quarter, including a \$48.7 million restructuring charge.

"We also have not seen the last of Data General layoffs," said Chief Executive Officer and President Edson de Castro. "We've got a lot more to do. Getting efficient requires a lot of steps, and we're going to keep taking those steps."

DG is encouraged by the fact that some 100 software developers have signed on for ports to Avion, a company spokesman said.

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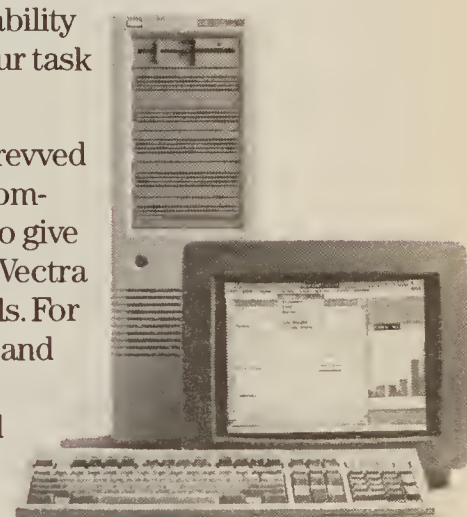
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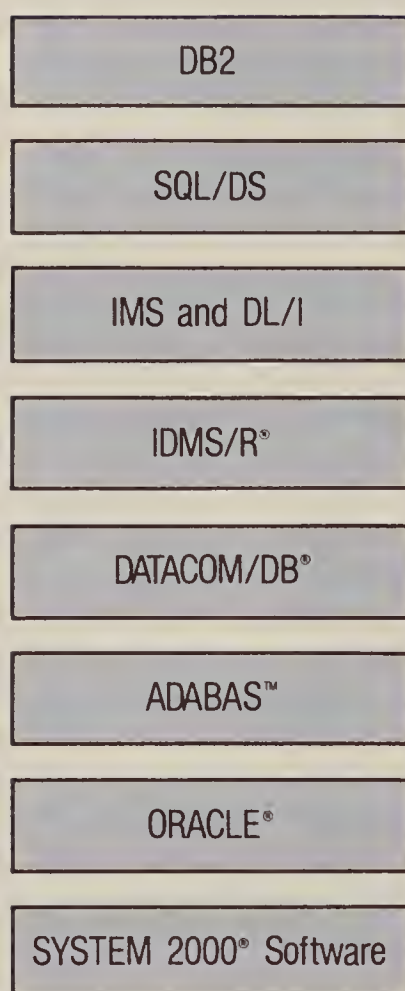


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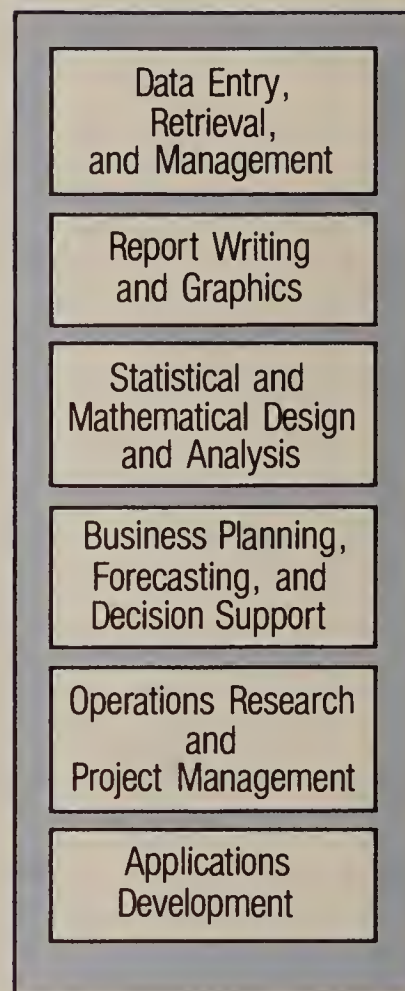


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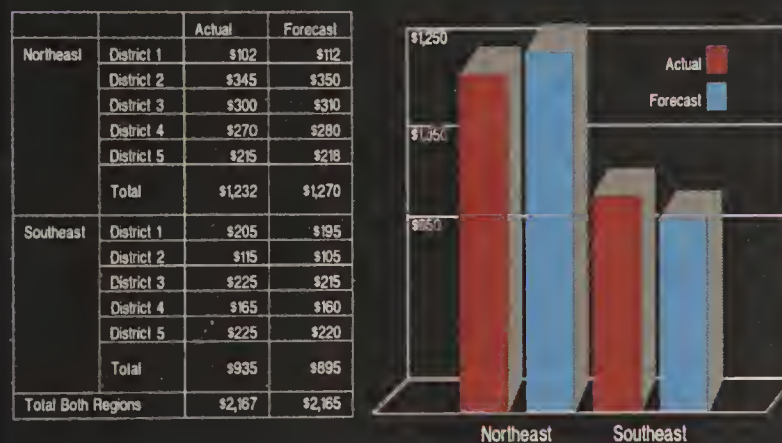
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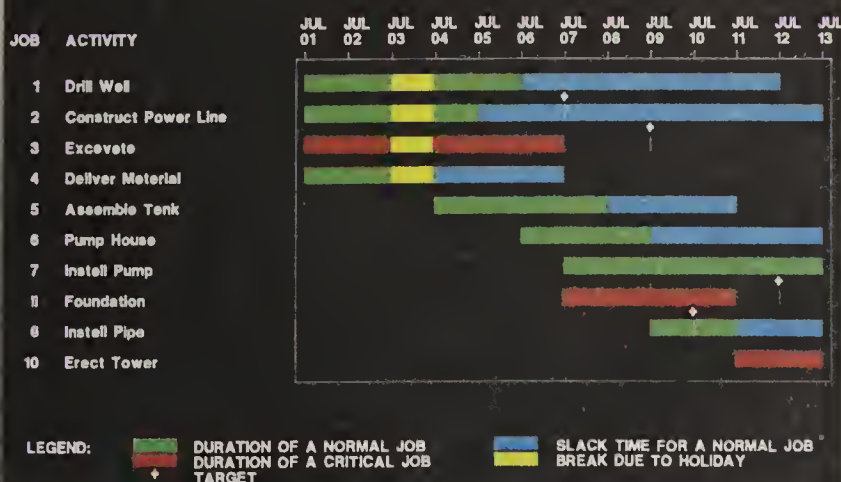
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Mips takes RISC in data center market

BY J. A. SAVAGE
CW STAFF

Reduced instruction set computing (RISC) machines got a big push toward the traditional data center market with last week's introduction of Mips Computer

Systems, Inc.'s most powerful machine.

Simultaneously, the company announced that Control Data Corp. would be selling Mips systems.

Using emitter-coupled logic (ECL) chip technology for its

processor, the RC6280 computer runs both technical and commercial applications at 55 million instructions per second (MIPS), according to the company. ECL chips are more delicate and cost more than CMOS, but they are much faster.

Mips is the third company in less than a month to launch new bids for the data center market after formerly having no offerings in that area. Digital Equipment Corp. and Tandem Computers, Inc. have each offered mainframes: Tandem with its

proprietary operating system, Guardian, and DEC with its own VMS operating system. Mips' new machine, the RC6280, runs on the Unix operating system.

Mips also claimed that its I/O subsystem provides 200M byte/sec. "across multiple VME buses."

"The problem," said Andrew Allison, editor of the "RISC Management" Newsletter, based in Los Altos, Calif., "is that you need to add five VME bus cabinets." Each cabinet handles only 33M byte/sec.

“WHAT MANAGER is going to risk his job buying Mips?”

BONNIE DIGRIUS
INFOCORP.

DEC and Tandem are likely to have an easier time nudging into the mainframe market than upstart Mips, according to Bonnie Digrius, an analyst at Santa Clara, Calif.-based Infocorp. DEC and Tandem have current users who are looking for more capacity and are likely to take the next step up from the same vendor, she said.

"What IS manager is going to risk his job buying Mips?" Digrius said. She added that while Mips lacks credibility in the mainframe market, CDC has lost much of its credibility. "CDC is holding on by their fingernails."

New sales techniques

In the cases of DEC and Tandem, as well as Mips, the sales forces need to learn how to sell into a mainframe market, according to Digrius.

At the same time that Mips was announcing its new high-end machine at Unix Expo in New York, the company also was demonstrating two midrange machines that had been introduced a week earlier.

Those systems, the RC3260 and RC3240, are said to provide performance equal to or higher than that of their predecessors at lower prices. They are more compact but are essentially repackaged from earlier models, according to Allison.

Claiming to be the first company to provide the Systems Performance Evaluation Cooperative's Specmark performance ratings for its systems, Mips said the RC3260 provides 16.5 Specmarks and 20 MIPS and that the RC3240 runs at 15 Specmarks and 18 MIPS. The company said it expects Specmark numbers for the RC6280 to be available by the end of the year.

Prices start at \$55,000 for the RC3260 and at \$30,000 for the RC3240.

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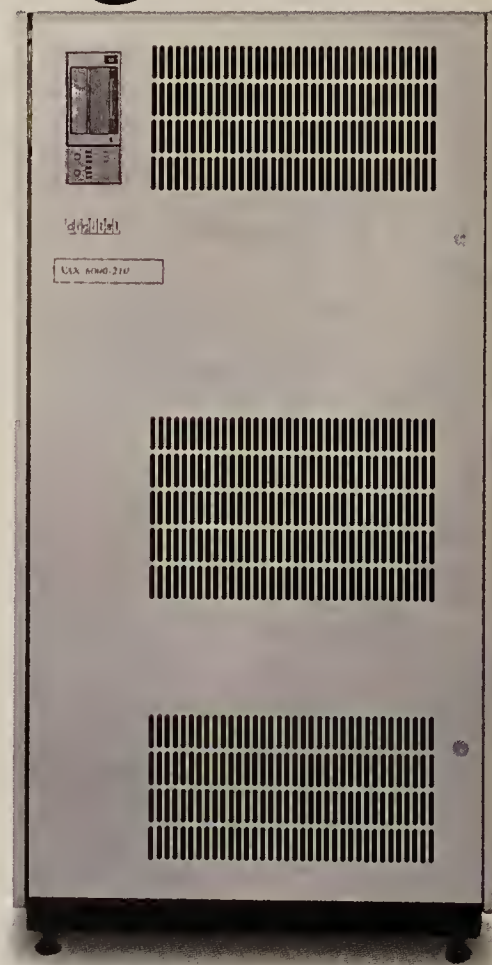
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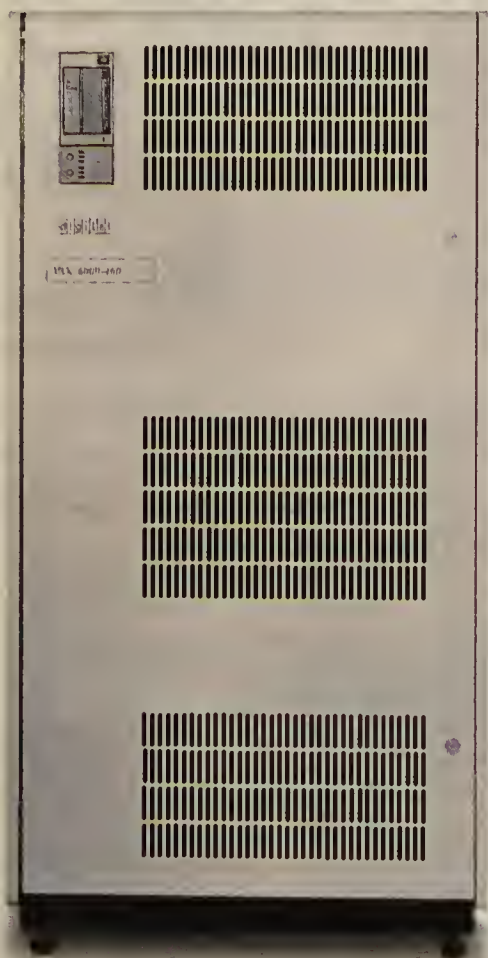
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EDITORIAL

Rank and file

LESTER THUROW HOLDS back very little when talking about the magnitude of the challenge facing the U.S. as the era of truly global economy goes from the early light of dawn into full daylight in the coming decade.

And the dean of MIT's Sloan School of Management was certainly frank in his assessment of a potentially fatal flaw in our economic fabric when he addressed guests at *Computerworld's* Premier 100 gala last week in New York.

Global leadership, Thurow said, will not rest with those nations endowed with natural resources. Rather, the nations that have invested in human capital through education, nations that churn out a skilled cadre of "privates and corporals" from the high schools, will dominate.

Alas, we all know the truly grim realities of large segments of our high school population, particularly in the inner cities. Dropout rates are staggering among certain groups. Graduates in numbers that are embarrassingly high cannot read beyond eighth-grade levels. Our young adults have trouble identifying the century in which the U.S. Civil War took place, let alone understanding the significance of such events.

Meanwhile, the high school students who score the highest in standardized math tests are from Hungary. The top of the class in physics testing comes from the Soviet Union.

Where we do outshine the rest of the world, as the dean noted, is in our university system. There we are preparing what he termed the "colonels and generals" for tomorrow's economic battlefield.

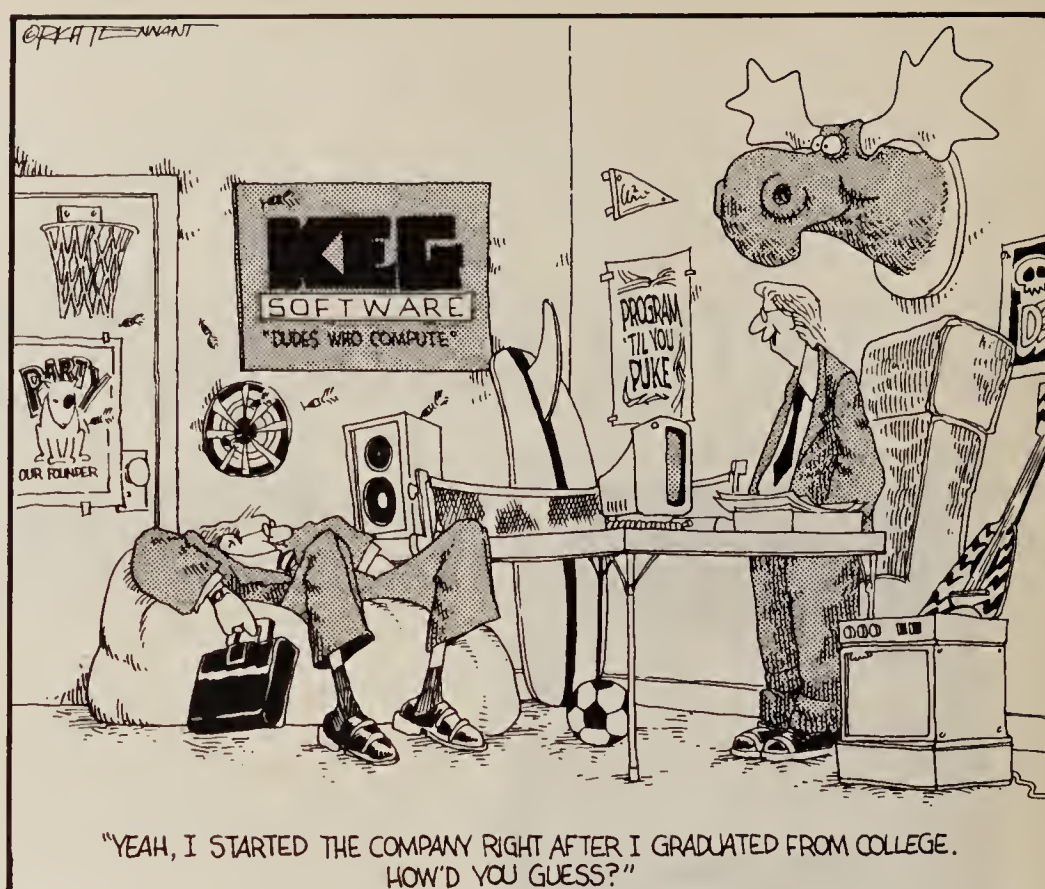
A recent *Computerworld* study [CW, Oct. 30] ranked the best IS graduate programs in the U.S. (a list, by the way, that was topped by Thurow's Sloan School). It is abundantly clear why the front-runners on our list attained their position. Each school has a vision of the future where IS professionals must have that vital blend of technological and managerial skills. This vision is then projected onto the curriculum and then manifested in the great demand for the products of the top schools' programs.

But again, these graduates are the colonels and generals. And as we noted last year, an increasing number of IS students, particularly at the graduate level, are foreign students who are inclined to take their skills back home.

And what of the colonels and generals that remain here? Aren't they only as effective as the soldiers they lead?

That is the fatal flaw, Thurow said. We are in danger of entering the 1990s woefully ill-equipped for the jobs that will exist because we haven't trained our workers to read, write, compute and think like productive human beings.

There is no question that this country possesses the greatest investment in information technology. If we don't seriously acknowledge the gravity of the education challenge, that investment will soon look like Howard Hughes' "Spruce Goose" — a tremendous plane, but it never really got far off the ground.



LETTERS TO THE EDITOR

Transfixer sold

The In-Depth article "Packing your testing tool box" [CW, Oct. 9], complimented Transfixer, the Cobol-based test data distiller and coverage monitor. On July 1, 1989, Marble Software sold the Transfixer product outright to J Cris Miller & Associates (JCM&A).

JCM&A is extending Transfixer to the personal computer and to accommodate languages other than Cobol. One Transfixer scenario distills production data on the mainframe for testing and coverage analysis of programs maintained on personal computers.

JCM&A is a software re-engineering firm offering consulting, training and products for personal computer support of mainframe systems.

J Cris Miller
J Cris Miller & Associates
La Grange, Ill.

New faithful

After participating in the recent Wang Laboratories, Inc. users conference, I found that the article "Wang faithful convene, regain hope" [CW, Oct. 16] fell far short from the truth of the matter.

The Wang "faithful" are only so because the VS platform performs exceedingly well for their organizations. Several system administrators from installations only running Wang WP or WP+ report that they are under attack from advocates of local-area networks and IBM Application System/400s. Users report that these alternate platforms require much higher levels of support.

Regarding the LAN panacea, a recent front-page article in CW

indicated that LANs are conservatively estimated as being down 6% of the time; my company's VS 7010 has not been down in the past year — not once.

Information systems and data processing managers supporting diverse applications have stronger ties to Wang. Organizations that have bought into Wang's integrated software platforms (particularly the fourth-generation language PACE) continue to reap major benefits in terms of short Application Development Life Cycles and ease of program maintenance.

I note that CW has touted the achievements made at El Paso Natural Gas [CW Special Report, Oct. 9] without mentioning that Wang has the only platform that could support development of such robust applications (i.e., DBMS, WP, image and electronic mail all integrated).

I take exception to Tom Willmott's quote that Wang has "still not identified or communicated what the vision is." It was clear to all attendees that Wang is moving the VS toward an enriched client/server architecture with very strong support for industry standards and graphical user interfaces.

Unix was not discussed at the conference because most current users are not interested in it. Wang itself is committed to Unix. I expect that Wang's pricing on Image and Freestyle will get more competitive. Connectivity with LANs and the Banyan/VS products are clear signals about the future. Wang's new line of personal computers looks solid.

To say that the Wang faithful regained "hope" is out of line; what the Wang faithful regained was confidence. Now, we can get on with delivering applications

in our own organizations.

Stephen L. Koller
Director, Information Services
Int'l. Exec. Services Corps.
Stamford, Conn.

Earlier connection

The article "Oracle previews next release" [CW, Oct. 9] contains a piece of misinformation. Oracle's executives state that Version 7.0 will be the "world's first true distributed database management system." This statement is incorrect. Laptop Connections, Inc.'s product "Connect," a multiuser distributed database system, was initially demonstrated at the PC Expo show in New York on June 20-23, 1989. We are working on a Version 2, which will be released early in 1990.

It is interesting to note that we have tried on several occasions to get *Computerworld* to print a new product announcement or write an article covering our product; the first attempt was in early May 1989, but for some reason we have been unsuccessful.

Laptop Connections will be releasing its product early next year. So, let's set the record straight — Oracle does not really have the "world's first distributed database management system."

Jody Issod
Regional Sales Manager
Laptop Connections, Inc.
Marlboro, Mass.

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701.

Is Unix really the answer?

GILBERT P. WILLIAMSON



Driven by users, a new era of freedom in computing is emerging, with Unix as the rallying cry.

The framework of a user revolution based on Unix is already established. First, some computer hardware and software vendors, for the good of users, are seeking bilateral disarmament. We have witnessed the weapons of proprietary systems being laid down at borders that once were heavily guarded.

But while it is virtually impossible to find a vendor that publicly disagrees with open systems, there remains an abundance of vendors still essentially pursuing a proprietary strategy. Proprietary vendors are not addressing the real needs of users.

How does one tell a company that is merely engaging in rhetoric from a company that is really serious about open systems? As in all other endeavors, you measure by the results — much like “on-site inspections” for weapons systems. As always, action speaks louder than words. Are vendors making their products more open or continuing a “lock-in” strategy?

Promises, promises

Computer glasnost, or the trend toward open systems, like its political counterpart, promises “perestroika,” the restructuring of an established order, as well as revitalized productivity.

Computer glasnost refers to a set of standards that enable interoperability of different computers, subsystems and software. These standards cover operating system interfaces, languages, I/O interconnections, communications protocols and graphical interfaces.

Glasnost, both in the political arena and in the information systems industry, is in the best interest of all involved. But when will it come to fruition? And within computer glasnost, how much voice will the user ultimately have in the process?

FROM THE PERSPECTIVE of price, Unix is a boon, because it forces all of us in the industry to compete more than we have in the past.

Happily, those answers will not come from vendors, as they have in the past. Today, user benefits are central, and Unix users, in particular, have a major voice. The key phrase in computer glasnost is “user independence.” This is an economic issue that proprietary-driven vendors would prefer to hide.

“Free-market computing” brings greater competition to the marketplace and accelerates technological progress. When price/performance, rather than manufacturer loyalty, becomes the criterion for decisions, users are free to choose systems that best meet their needs. For the user, the economics of this competition are also clear.

The portable and evolutionary attributes of open systems protect an organi-

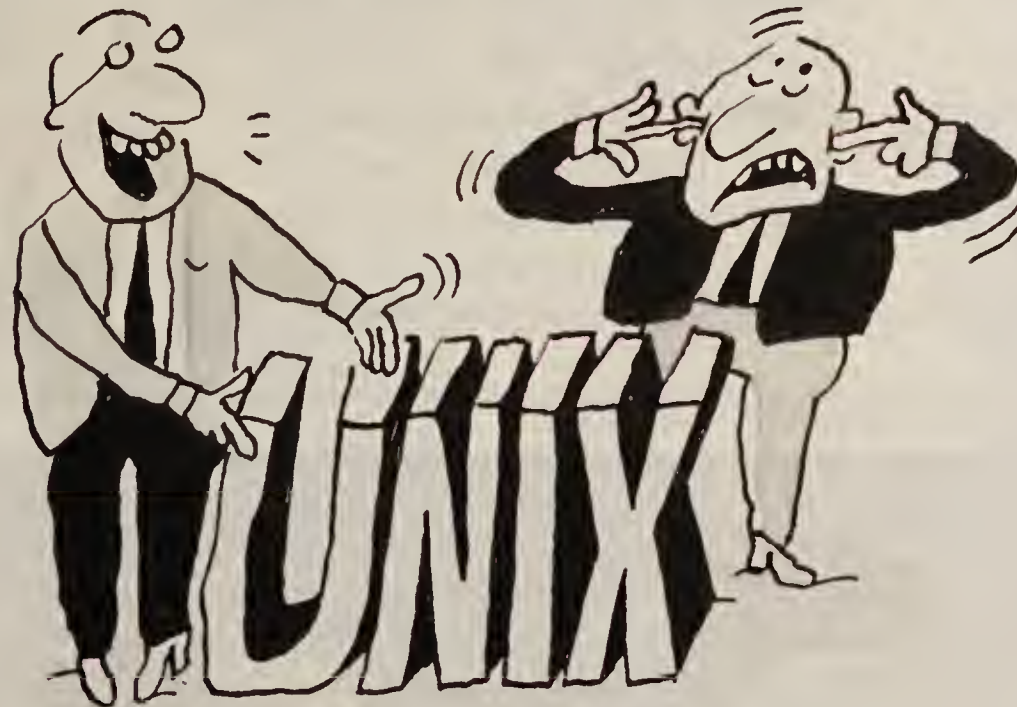
Williamson is president of NCR Corp.

zation's investment in hardware, software and training. All these contribute to a notable increase in individual productivity and organizational efficiency.

In addition to the economic benefits, users gain early access to advanced technology of the highest quality and are able to incorporate new technology rapidly.

Good points

Clearly, there are advantages for those vendors that are not economically tied to proprietary offerings. These advantages can be passed on to users. The primary advantage is that time and money aren't



NICULAE ASCIU

wasted in reinventing existing technologies or rewriting applications for a particular hardware product.

This allows both the user and the vendor to leverage the vast investments made in technological development throughout this research-intensive industry.

Industry-standard software also will greatly improve reliability because the discovery and correction of software errors occur at a rate proportional to use.

The truly competitive systems from the beginning of time almost always have been systems that offer the best price/performance.

From the perspective of price, Unix is a boon, because it forces all of us in the industry to compete more than we have in the past.

Unix is attracting a variety of vendors — both hardware and software — to offer products that can work together to best meet users' needs.

So, the bottom line will be that Unix users receive improved price/performance from increased levels of research and development funds that are available to address user issues. That is evidenced in what is happening in the marketplace today.

Users deserve a choice — the freedom to choose solutions, technology and vendors. Although Unix is just one part of the open systems story, I think it is fair to say that Unix has been the banner of the open systems revolution.

EFREM G. MALLACH



Much has been made of minicomputer industry troubles. Conventional wisdom pins the blame on increasingly powerful desktop microcomputers.

However, a key reason for the recent woes in the minicomputer industry lies at the door of the vendors and their handling of Unix. The issues are not technical — security, file handling, etc. They are emotional and psychological.

ize what they're doing or why they are doing it.

Mini vendors can't do much about improved microcomputers, but they *can* do something about Unix acceptability.

First, they must deal with the vacuum in most users' minds around the phrase “commercial Unix.” No vendor is rushing in to fill it. There is no other market segment of remotely comparable size that gets shunned as if it were a leper. In the absence of one or a few top-rank vendors who associate themselves with this market — and who base their corporate strategy on this market, commercial users will avoid Unix.

The second reason commercial users avoid Unix is squabbling within the Unix camp. Users shouldn't care about this. Rapidly narrowing differences among versions of Unix are esoteric and affect few applications. No matter. This is a psychological issue, not a technical one. Users are unwilling to get involved in the Unix fray.

Uneasy decision

A purchase feels like a commitment to one side over the other. It's like bartenders fighting in front of customers. Even those whose service is not affected find the scene discomforting and take their business elsewhere.

To eliminate this emotional obstacle to Unix acceptance, the Open Software Foundation (OSF) and Unix International must bury the hatchet.

Let's face it: If AT&T's present structure and policies had been in place two years ago, OSF never would have been formed. OSF has made a real contribution by forcing AT&T onto the straight and narrow. Yet, its core software-to-be — IBM's AIX — has turned out to be less than expected. (Some hint that its deficiencies are part of a carefully orchestrated

THE TROUBLE IS, information systems folks as a group do not feel that Unix is a viable commercial operating system.

Unix is one of the most-ballyhooed software systems in history. Unix market forecasts appear weekly. Including look-alikes and derivatives, observer consensus seems to be that 20% of hardware spending by 1992 will be on Unix systems. Because Unix will account for less than 5% of main-frame and desktop expenditures, it must garner more than 50% of minicomputer spending. The conclusion: hardly anybody will buy proprietary minis for new applications. The message nowadays seems to be, “If you get a mini, get a Unix mini or be left in the dust.”

The trouble is, information systems folks as a group do not feel that Unix is a viable commercial operating system. This has nothing to do with whether Unix really is a viable commercial operating system. We're talking emotions here, not technology.

Mind boggling

This creates a subconscious quandary in users' minds. As a group, they are afraid to buy into a proprietary minicomputer environment but are also afraid to buy into Unix. They escape the problem by not buying minis. Because their work has to get done somehow, they turn to micro-based local-area networks as the only reasonable alternative. They don't even real-

Mallach is a faculty member at the University of Lowell in Lowell, Mass., and a consultant to users and vendors.

ed IBM Unix-delaying strategy.) The OSF user interface, Hewlett-Packard Co.'s Motif, has won over even AT&T supporters' hearts. If AT&T would roll back its latest round of license fee hikes and commit to future stability in that area, it should be possible for both sides to get together. Public disputes between rival Unix groups hurt all vendors, including those who may seem to be “winning.”

The bottom line is that two things must happen for minicomputer sales to perk up. The Unix vendor community must unite, and one or more substantial firms must decide that commercial Unix can be the cornerstone of a viable corporate strategy. Once these things happen, the emotional factors blocking a minicomputer recovery will be gone. Minicomputer sales will turn up again. Suddenly, the obvious reasons for the downturn will not be so obvious any more. Pundits will send out reports explaining what happened, never mentioning that they were wrong in 1989.

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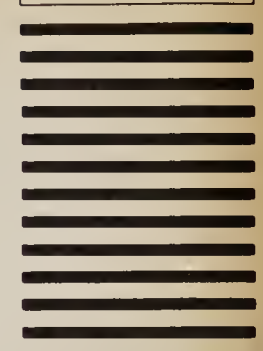
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IS identity crisis too much to handle

READER'S PLATFORM

EUGENE CLARKE

My world collapsed recently during a strategic planning meeting between information systems and our marketing department. It collapsed in a three-sentence exchange between the director of IS and the vice-president of marketing.

"How can we in IS help you to realize your goals?" the IS director asked. This seemed like a good open-ended question, and I was waiting for the vice-president of marketing to embrace IS in his confidence. IS was prepared to act as a full business partner with the marketing department.

The vice-president of marketing looked directly at the IS director and said, "Beyond capacity planning for your computers, I don't know how you can help. I'm not even sure what your role is in all of this." This response was shattering for many reasons. But it served to add a dose of reality to my world.

We in IS like new beginnings. The year 1984 was a new beginning for me. The director of MIS outlined a new and challenging role for us programmers (now business analysts) for the '80s. We were to become less technical and more business-oriented. We were to learn the business, learn to develop business solutions to business problems and interact with our end users (now business partners) on their level. We were to look like, act like and function like consultants for one of the Big Eight accounting firms.

New buzzwords

We went to many seminars on "Consulting Skills," "Strategic Business Planning," "Writing Business Proposals" and "Presentation Skills." We implemented a full-functioning Help desk, and in 1987, the Information Center was opened. In-house program development was out, and commercial packages were the trend of the future. We implemented a major manufacturing package complete with end-user reporting tools. Relational database and connectivity (now networking) became the new buzzwords.

MIS was reorganized and changed its name to IS. Then it reorganized again so as to "better reflect" our new role as information consultants. The Operations, Technical Support and Maintenance Programming functions were relegated to the back room. The philosophy was this: We are not a technology function; we are a business consulting function.

IS expanded its systems development group by bringing in people with MBAs and masters degrees in systems science. This group was destined to redefine the role of IS within our business. IS was striving hard to be a business consultant for our business partners.

The words "risk taking" and "entrepreneurial" became common terms along with system "flexibility" and "maximum competitive advantage." The company was preparing for "global markets," and IS was preparing for a "global IS strategy." IS was prepared to act as an integral part of the business decision-making process.

We were ready to have our director take a seat on the operating committee at the vice-president level.

I liked this strategy. It felt good. IS would finally gain its rightful place within the business. We would gain the respect of our business partners. We would be in the trenches, side by side with our business partners, fighting the strategic business battles.

But what happened? Why does the vice-president of marketing still look at us as a service function and not as a business partner? What did we do wrong? We are a part of the Team, aren't we?

The short answer is, "no." IS or MIS or DP is still considered a technical service function within a business. Our historical role of providing critical computing and technical services overshadows all else. To an end user, asking IS to be its business partner is like asking the dry cleaner to help them pick out a wardrobe.

The IS divide

Therefore, IS has an identity crisis, and the crisis is tearing apart the function. IS has split itself into a business consulting entity and a technical/operations entity. The consulting entity is frustrated be-

cause it has made little impact within the business. The technical/operations side is seeing morale drop as IS management tries to ignore its existence. This loss of morale is aggravated as top management considers "outsourcing" basic operations and technical functions, a la Kodak. Yes, resumes are flying, and we are losing valuable technical skills.

What is the answer to this crisis? I don't know. I'll have time to think about it during my 18-month educational leave to complete an MBA degree with an MIS concentration at State University of New York at Binghamton. However, I do know that when I return to work, it won't be in IS. It will probably be as an IS consultant in our marketing department. At least my identity will be secure.

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SYSTEMS & SOFTWARE

HARD TALK

Rosemary Hamilton

Minding its S's and J's



IBM would never say so, but one of the most important tasks for its new 3090 J models could be to bring a quick, painless death to the 3090 S models.

Certainly, IBM did not think of this when development began on the J models. However, as S model events unfolded this year, the thought had to have popped into the minds of some IBM executives.

Let's face it — the S models have had a dark cloud hanging over them almost since they got out the door. Initial shipments in the fall of 1988 went fine. Early users were gung-ho on the new systems.

However, at the start of 1989, reports surfaced about chip problems. This turned into S model shipment delays. By midyear, IBM was faced with reports from the field that thermal conduction modules (TCM) were failing on S models at a much higher rate than normal. IBM insisted that the failures were typical of a new product

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Inside

- Stratus systems keep Dahlkemper's nightmares at bay. Page 29.
- Apple readies for CASE mainframe world. Page 29.
- Desktop system packs super wallop. Page 31.

IBM spices up batch offering

BY ROBERT MORAN
CW STAFF

Although users said IBM's new release of MVS/ESA is not a cure-all, they welcomed its potential as a tool to pry open the batch processing window. It also can help to shut the window of vulnerability by tightening security.

Along with ESA security enhancements, IBM announced Version 1, Release 9 of its Resource Access Control Facility (RACF) software, which works in conjunction with ESA and its subsystems.

With its introduction of 16 new 3090 mainframes recently, IBM introduced a batch process-

ing enhancement called Hiperbatch, which it said speeds batch processing by up to 60%, and the Move-Page facility, a hardware instruction that essentially is an improved pipeline between Hiperspaces in expanded storage and central storage.

IBM said the new release of ESA — MVS/SP 3.1.3 — will be available December 22. Graduated monthly charges with MVS JES/2 range from \$4,280 to \$5,795, depending on the size of the processor. With MVS JES/3, prices range from \$4,815 to \$6,520.

The use of Hiperbatch is restricted to 3090 S and J models, which contain the Move-Page facility. These models will not car-

ry an additional charge, IBM said.

The dual facilities reduce batch processing time by streamlining the process of pulling data into expanded storage, moving it to central storage and eluding the time-consuming step of fetching data from direct-access storage devices.

Jack Owens, executive vice-president and director of EDP services at Shearson Lehman Hutton, Inc. in New York, said that the company is testing Hiperbatch with more than 200 production jobs. Owens found that "individual jobs, depending on secondary limitations, have a decreased elapsed time from 30% up to 80%."

According to IBM, Hiperbatch does not require organizations to rewrite applications or make JCL changes. "Hiperbatch is transparent from an application programming standpoint," Owens said. "It is effectively a table update and the execution of the job."

According to Owens, Hiperbatch benefits only sequential processing and is usable for reading large portions of VSAM files sequentially or for using QSAM to read master files sequentially.

As such, random processing will not benefit from Hiperbatch — a role assigned to Batch Local Shared Resources (LSR), which uses Hiperspace buffers much the same way that Hiperbatch does and accesses VSAM files.

According to IBM, the new
Continued on page 31

Card maker turns to DPS 9000

BY ROSEMARY HAMILTON
CW STAFF

COLORADO SPRINGS — Current, Inc., a mail-order greeting-card company, needed a better way to manage its customer base of 11 million homes.

The Bull H. N. Information Systems, Inc. DPS 88 just was not fast enough anymore. So Current took the risk of becoming the first user of Bull's newest mainframe, the DPS 9000.

To Gary Richard, vice-president of management information services, it was well worth the risk.

The DPS 9000, which was delivered in June and went into production mode in August, has given Current a much-needed performance boost. It has also avoided the typical headaches that come with the first installation of new hardware.

"We really didn't have problems," Richard said. "It was one

of the smoothest transitions we've made."

Bull introduced the DPS 9000 in November 1988 and was greeted with an upbeat reaction from industry observers who said the company badly needed a

relies strictly on the management of its customer list and effective mailings to stay profitable. "Our retail store is our catalog and how that's managed and mailed makes our success," he said.



new high-end machine to hang on to its customer base. At the time, Bull claimed to outdo IBM in transaction processing. However, Current was more concerned with running its greeting-card business than with IBM comparisons.

According to Richard, a top-of-the-line system is more than just critical to Current's business — it actually is the business. As a mail-order company, Current

Richard said one of the most obvious improvements with the DPS 9000 has shown up in Current's direct-mail analysis software program. The software is used to analyze the

customer base and determine which shoppers are most likely to respond to a given direct-mail campaign based on their previous buying patterns.

The software, implemented in 1983, has been a big money-saver for Current, Richard said. By tailoring its direct mailing to select customers instead of blanketing the customer base, Current can save thousands of dollars in postage alone. "When we

ran this for the first time, our mailing costs dropped by about \$300,000," he said.

With the DPS 88, a full-scale run on the customer files could take up to 16 hours. On the DPS 9000, the same job takes only four hours. Richard pointed out that the reduced runtime also takes into account the use of new tape-cartridge drives, which replaced reel-to-reel drives used with the DPS 88. Total processor time dropped from six hours to about one hour, he said.

Current designed a customer system unlike today's typical database management systems. The customer files are stored on tape and pulled into the system as needed. The analysis is then run against the raw files.

Richard said the DPS 9000 is well suited to this task because a single, powerful system is more effective than several distributed systems would be. "The analyses we do are huge programs that run against all the data," he explained. "There's really no way to distribute that job and use multiple smaller mainframes."

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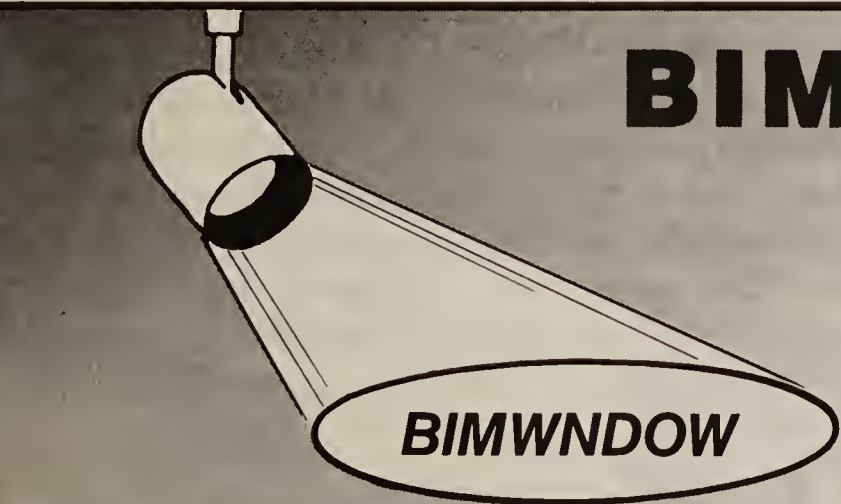
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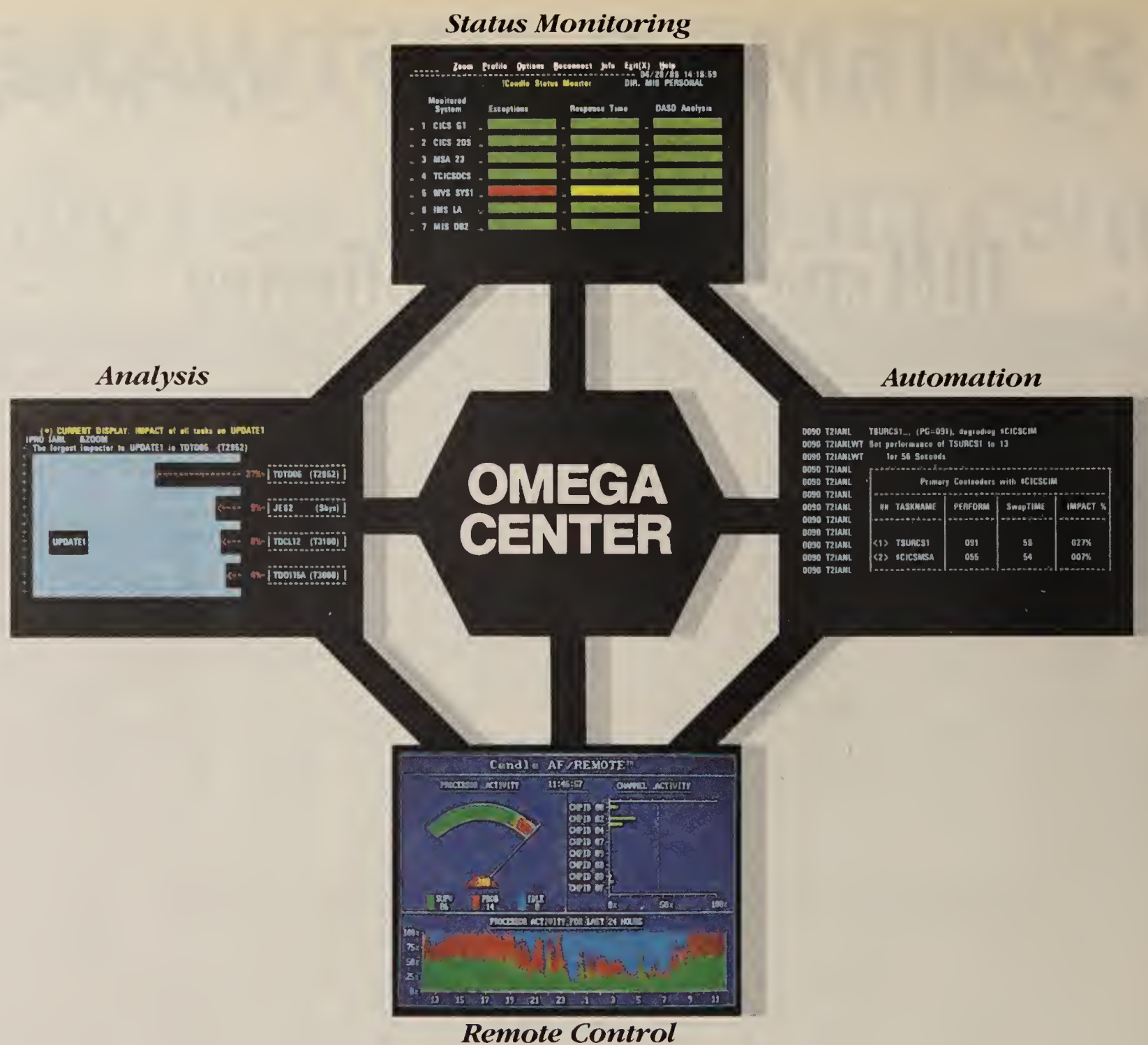
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3. COMPUTER INVOLVEMENT (Circle all that apply)

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 - E. Office Automation Systems
 - F. No Computer Involvement

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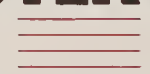
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Stratus allays one retailer's fears

ON SITE

BY MARYFRAN JOHNSON
CW STAFF

Some people get the willies in high places. Others shudder at the thought of elevators, crowded rooms or dark basements.

Angelo Casciato's greatest fear centers on the day after Thanksgiving, when the mere thought of computers crashing makes his retailer's heart thump with anxiety.

"Being on-line is an absolute necessity for us," said the data processing operations manager for Joseph B. Dahlkemper, Inc., which owns a chain of nine catalog showrooms in New York, Pennsylvania and Ohio. "Having my computer system down on that day would mean millions of dollars lost."

Since 1984, Dahlkemper's has relied on a Stratus XA2000 Model 120 and an older Model 600 to keep Casciato's *bete noire*

in its place.

"I love Stratus. It allows me to sleep at night," Casciato said.

In early October, a second Model 120 replaced the older machine.

Now Dahlkemper's has decided to put Stratus' newest entry-level machines to work as in-store processors in all nine of its catalog showrooms.

The XA2000 Model 30 was introduced on Oct. 3 as the first Stratus machine that offers selectable levels of fault-tolerance.

In a lakeside city beset by electrical storms, downtime was an unwelcome

way of life for Dahlkemper's store clerks when two Digital Equipment Corp. PDP-11/70s ran the business from 1977

through 1984.

The company's staff of 800 employees doubles to 1,600 during the three months before the Christmas holiday, when Dahlkemper's rings up 60% of its annual sales.



Dahlkemper's relies on a Stratus XA2000

During one nightmare Christmas season before the shift to fault-tolerant systems, there was a disk-controller problem on

the DEC machine that caused a variety of problems and inventory foul-ups over a five-week period.

"It hampered our business quite a bit, though it would be hard to quantify the sales we may have lost," Casciato said.

These days, however, the company advertises itself as the place where customers get "No. 1 service" at all times.

"This kind of system is what retailers are looking for: redundancy in hardware. What's missing is the software," Casciato explained.

"You either have to develop it in-house or find a package out there to convert over. Normally, when you find one you like, it has the hardware with it and it's nonredundant. There's the catch-22," he added.

The Stratus system now takes care of all of Dahlkemper's

IS requirements except for accounts payable and general ledger, which are still residing on the remaining PDP-11/70.

"Next year, we'll be converting that to Stratus as well," Casciato noted.

Veritable smorgasbord

Dahlkemper's customized software — rewritten in-house using the former DEC applications as a design base — includes, among other things, an inventory management and auditing system, sales analysis information, a bridal registry database and debit/memo tracking.

The stores sell everything from jewelry, housewares and consumer electronics to sporting goods, toys and, most recently, furniture.

"The availability of stock and inventory information is vital," said Marketing Director Bill Jackson.

"When the customer is on the phone, or standing there in front of you at the store, that ability to punch in the item and find out if

Continued on page 31

Apple presents a case for its CASE platform

BY JEAN S. BOZMAN
CW STAFF

SAN FRANCISCO — Apple Computer, Inc. took a tentative step closer to the mainframe IS community late last month, as it presented a suite of computer-aided software engineering (CASE) tools at CASExpo '89 here.

Apple described its Macintosh platform as synergistic with software development. "Apple's mission and the goals of CASE are congruent," Morris Tardalsky, Apple's senior vice-pres-

ident for information technology, told his CASExpo audience. "They both aim toward empowering individuals, which means more productive programmers, analysts, designers and architects." Until recently, Tardalsky had managed DB2 development at IBM's Santa Teresa, Calif., software laboratory.

Mike West, manager of Apple's CASE technologies division, said in an interview that programmers would be more productive using Macs as "windows" into such complex systems as IBM mainframes, Digital

Equipment Corp. VAXs and other large-scale machines. "When you have a CASE tool on a Macintosh, you are leveraging the productivity tools that come standard on our platform," West said. Those built-in tools, he said, include the Macintosh graphical user interface, consistent help menus and access to hundreds of word-processing and graphics packages written for the Macintosh.

West said Apple's CASE tools will eventually cover four broad categories: end-user tools, object-oriented design tools, tools to design cooperative-processing applications and traditional CASE tools, such as Cobol generators. He noted that Apple's CASExpo visit was a move onto new ground. "Until now, we have been seen by others as for-

eign entities in the MIS and systems engineering worlds."

Apple showed off its CASE wares in the form of Macapp, an object-oriented application generator, the Hypercard object-oriented generator for database applications and a decision-support software called MacDSS.

In other developments, attendance at CASExpo fell far short of the 1,500 goal set by show organizers, apparently because of the Oct. 17 earthquake.

Those who walked through the exhibit area saw a preview of McDonnell Douglas Computer Systems Co.'s Prokit Workbench Release 2.0. The new software, now in beta test at several large user sites, extends the 2-year-old Prokit Workbench 1.0. Prokit's new features include generation of "schema"

for IBM's DB2 relational database management system; support for ad hoc queries and for report-writing; and extensions to Prokit's own data repository definitions.

"We're extending the meta-model, which is our definition of the data repository," explained Thomas L. Schwab, product manager of CASE tools for McDonnell Douglas' Systems Integration Company, in St. Louis. The company added 25 attributes such as data elements and data processes to Prokit.

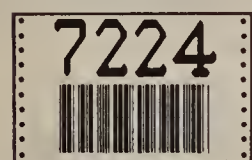
Users of Prokit Workbench 1.0 will receive a copy of Release 2.0 as an upgrade at no additional charge, once it ships this December. New users will pay \$9,200 for a single copy, or \$6,500 per copy if 10 or more licenses are sold, Schwab said.

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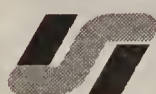
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A Comparison Chart of the Major Cooperative Processing Software Products:	SUPER-LINK® Family	Easel™	Mozart™	Arbiter®	IBM's HLLAPP	IBM's APPC™ or CPl-C™
Functions:						
Processing Topologies Supported						
SAA CUA Interface for existing 3270 applications:						
Under PC/DOS	Yes	No	No	No	No	No
Under OS/2	Yes	Yes	Yes	No	No	No
Transition from PC/DOS to OS/2	Yes	No	?	No	No	No
3270 Communications	Yes	Yes	Yes	No	Yes	No
Peer-to-Peer Communications:						
for extending existing 3270 applications	Yes	No	No	No	No	No
for new applications	Yes	No	No	Yes	No	Yes
Maintenance of PC applications & data from a central library	Yes	No	No	No	No	No
Background file transfer in PC/DOS	Yes	No	No	No	No	No
Background peer-to-peer processing in PC/DOS	Yes	No	No	No	No	No
Object Orientation	Yes	Yes	No	No	No	No
CASE/Application Generation	Yes	No	No	No	No	No
SAA CUA Support						
All functions supported on PC/DOS:	Yes	No	No	No	No	No
Action Bar	Yes	*	Yes	No	No	No
Pull-down menus	Yes	*	Yes	No	No	No
Pop-up menus	Yes	*	Yes	No	No	No
Messages and Prompts	Yes	*	Yes	No	No	No
Dialog Boxes	Yes	*	Yes	No	No	No
Forms	Yes	*	Yes	No	No	No
Direct support for multiple levels of action bars and pull-downs	Yes	*	No	No	No	No
Action bars and Pull-downs in a form	Yes	*	No	No	No	No
Single and multiple selection menus	Yes	*	No	No	No	No
Menus and Lists within a form	Yes	*	No	No	No	No
CUA defined help	Yes	*	No	No	No	No
Development System Features: available without programming						
Field-level context-sensitive help	Yes	No	Yes	No	No	No
Optional learning mode (help always displayed)	Yes	No	No	No	No	No
Embedded User Assistance (pop-up selection lists)	Yes	No	No	No	No	No
Dictionary for storage and re-use of definitions & documentation	Yes	No	No	No	No	No
Data Editing/Validation:						
Data type/mask checking	Yes	No	Yes	No	No	No
Range/limit checking	Yes	No	No	No	No	No
Date formatting/checking	Yes	No	No	No	No	No
Validation against database files	Yes	No	No	No	No	No
Required fields	Yes	No	No	No	No	No
"Must Fill" fields	Yes	No	No	No	No	No
Zero not valid fields	Yes	No	No	No	No	No
Multiple validation points during PC processing of transaction form	Yes	No	No	No	No	No
Complete local application testing, database maintenance, interface testing, and mainframe communications simulation	Yes	No	No	No	No	No
Language Objects Available Without Low Level Programming						
Display and selection from:						
In-memory lists	Yes	Yes	Yes	No	No	No
File lists	Yes	No	Yes	No	No	No
Database lists	Yes	No	Yes	No	No	No
Menu display and selection	Yes	No	Yes	No	No	No
Help at all levels: (Panel, Action bar, Menu, Form, & Field)	Yes	No	Yes	No	No	No
Error Processing	Yes	No	Yes	No	No	No
Add/update/delete/locate on:						
Sequential files	Yes	Yes	Yes	No	No	No
Database files	Yes	No	Yes	No	No	No
Host logon sequence	Yes	No	No	No	No	No
Determining 3270 screen identification	Yes	No	Yes	No	No	No
Read/Write all fields on 3270 screen with a single command	Yes	No	No	No	No	No
Determine dynamic 3270 field attribute changes	Yes	No	No	No	No	No
Dynamic modification of field attributes based on form entries						
Initial values displayed	Yes	No	No	No	No	No
Protected/unprotected fields	Yes	No	No	No	No	No
Development Environment Comparison						
Object Orientation	Yes	Yes	No	No	No	No
Dictionary and documentation	Yes	No	No	No	No	No
Panel/Form painter for Creation/Maintenance	Yes	Yes	Yes	No	No	No
3270 screen capture: Picture and attributes	Yes	No	No	No	No	No
Application Generation (CASE)	Yes	No	No	No	No	No
Intelligent editor (language sensitive)	Yes	No	No	No	No	No
System/user defined templates	Yes	No	No	No	No	No
Integrated compile/test/debug	Yes	No	No	No	No	No
Keyboard re-mapping	Yes	Yes	Yes	No	No	No
Compiled environment	Yes	Yes	Yes	No	No	No
Execution-time source debugging	Yes	Some	No	No	No	No
Host Environments Supported for Peer to Peer						
MVS - CICS	Yes	No	No	Yes	No	No
MVS - IDMS/DC	Yes	No	No	No	No	No
MVS / TSO	Yes	No	No	No	No	No
DOS / VSE-CICS	Yes	No	No	Yes	No	No
VM / CMS	Yes	No	No	Yes	No	No
DEC VAX / VMS	Yes	No	No	No	No	No
Minimum PC Hardware Requirements: IBM XT / Clone, 640k	Yes	Yes	Yes	Yes	Yes	Yes

*Easel does not support the SAA CUA style interface under PC/DOS only under OS/2.

Every effort to present an accurate chart has been made, however no guarantee can be made (8/7/89). Super-Link® is a registered trademark of Multi Soft, Inc., Lawrenceville, NJ., Mozart™ is a trademark of Aspen Research. Easel™ is a trademark of Interactive Images, Inc. Arbiter® is a registered trademark of Tangram Systems.

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Multi Soft's SUPER-LINK product family represents the leading edge of cooperative processing technology. It allows the development of SAA/CUA-compatible user interfaces now on standard low-cost 640K DOS PCs. It provides the full peer-to-peer cooperative processing capabilities of IBM's APPC (Advanced Program-to-Program Communications) product for PC/host applications. However, instead of requiring the use of LU6.2 SNA sessions, it works over the LU2-based networks that are already in place. Both standard, LU2-based SNA links, as well as asynchronous communications are supported. Not even IBM offers that kind of support now. All SUPER-LINK based applications port without change to IBM's OS/2, PM, and LU6.2 strategic platforms.

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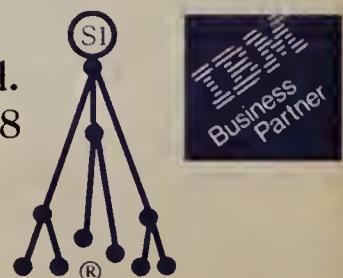
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Hamilton

FROM PAGE 27

generation. Despite these claims, IBM couldn't undo the negative feelings that had developed. The letter S had become associated with bad news.

At this point, the J models are not only a new high end for the mainframe line; the letter J itself represents a fresh start.

Of course, IBM would never speak of killing off the S models. So, there was no official cancellation of the product line. Instead, we got some typical roundabout maneuvers from which we can infer that IBM would like nothing better than to put the S model behind it.

We got 16 new J models added to the 3090 product line, along with a statement that S models will continue to be available at their current prices. If IBM wanted to continue moving S models, wouldn't it make sense to lower their prices?

Without a price break, the S models will now sell for almost exactly the same price as the J models. Let's see if IBM can find a user who wants to pay nearly the same price as a J customer and get 14% less performance and no new features.

What's more, IBM doesn't seem to want to find such a user. An IBM spokesman even said that if a customer came to IBM and put in an order for an S model, the company would likely point them in the direction of a J. On top of that, users who had S models on order are now saying that IBM is automatically switching the order to the corresponding J model.

So, *officially*, the S models are alive and well. We can't expect IBM to say it, but the fate of the mainframe line couldn't be more obvious.

Another interesting aspect of the mainframe announcement was IBM's refusal to comment on the new high-end disk drive, the 3380 follow-on that has been delayed for months now. It would have made a nice large-systems package if they had given us a status report on the new drive as they rolled out mainframe hardware and software.

At the IBM press conference, William Grabe, IBM's vice-president and assistant general manager of U.S. marketing and services, was asked twice for a disk-drive update and then asked again.

He grew uncomfortable but didn't budge. He said that as soon as IBM felt the drive was ready to go, it would announce it. However, he also offered this good news: The San Francisco earthquake "had no impact whatsoever on our production." The drive is being manufactured at IBM's San Jose facility.

Hamilton is *Computerworld's* senior editor, systems.

Quen-16 packs super power onto desktop

BY MARYFRAN JOHNSON
CW STAFF

LAUREL, Md. — The Quen-16 "desktop supercomputer" — a high-performance parallel processor that its makers claim packs the number-crunching punch of a supercomputer in certain tasks — was unveiled recently.

At about the size of two IBM Personal Computers, the Interstate Electronics Corp. Quen Model 16 is an array processor that, linked to a Digital Equipment Corp. minicomputer or Sun Microsystems, Inc. workstation, can solve large computational problems faster and less expensively than a supercomputer, the vendor claimed.

It is the first commercial application of a low-cost parallel

processor that draws its supercomputing capabilities from the Department of Defense's Very High-Speed Integrated Circuits (VHSIC) technology.

The Quen architecture was developed at Johns Hopkins University's Applied Physics Laboratory and named after its inventor, Quentin E. Dolecek. It brings the computation speeds of a Cray Research, Inc. Cray 1 into the minicomputer price range, with an average price of \$100,000.

"This is a completely new paradigm for computing," said Dolecek, a principal researcher at Johns Hopkins' physics lab. "It is one of the first ones to attain that kind of computational speed at that kind of price. In a cost/performance ratio, it's groundbreaking."

Stratus

FROM PAGE 29

we have it is critical."

Each showroom has 10 to 20 terminals that are used for order entry, purchasing information and other office tasks. The terminals are hooked up to the two central Stratus machines via dedicated telephone lines and other telecommunications equipment.

Clerks can search the company's inventory to locate any of the 18,000 items for next-day delivery or to discover whether the item is out of stock and needs to be reordered.

Beta testing

The chain of stores is now serving as a beta-test site for Stratus Office 2000, an office automation package that includes electronic mail, filing facilities, directories and Stratus' port of Wordperfect Corp.'s Wordperfect.

"Our employees rely on the machines totally," said Brad

Zmyslinski, vice-president of Dahlkemper's management information system.

"If they can't look to see if a product is in stock, or what the price is, they don't know what to do. We keep no manuals in the stores."

Keeping up with growth

The ability to connect the two systems both physically and logically using Stratalink software from Stratus fit in with the company's migration plan and growth expectations, according to Zmyslinski.

Once the smaller Stratus systems are installed in the stores, the company will connect them to the host computers using Stratanet, which is a Stratus networking product for remote access.

Dahlkemper's clerks will eventually have access to inventory information that is constantly updated as each of the nine stores registers its sales and the host computers change the inventory count to reflect them.

IBM spices

FROM PAGE 27

ESA release has reduced elapsed job time up to 45%.

Don Egan, chief capacity planner at Provident Life and Accident Insurance Co. in Chattanooga Tenn., has used Batch LSR as a program temporary fix for about a month.

"Batch LSR helps with certain types of jobs," he said. "But it is restricted to your own data sets and to your own address spaces."

In security software, RACF Version 1, Release 9 will meet

the B1 security level of the U.S. Department of Defense, according to IBM. The company said that it previously met the department's C2 criteria.

RACF Version 1, Release 9 will be available for MVS and VM/SP in September 1990 and for VM/XA in November 1990, at a monthly charge of \$927.

According to IBM, the new release contains an enhanced MVS/ESA network job entry security for the transmission of information between systems as well as more control over MVS/ESA job submissions for determining the users' authority to submit jobs to the system.

The processor should be particularly welcome for applications such as signal processing, image processing, satellite data transmission, weather prediction or "anything where number crunching is involved," Dolecek said after the Quen-16 debuted at the IEEE Computer Society Symposium.

Although the applications library with the Quen-16 is "programmer-friendly," the need to rewrite source code to access the subroutines will vary significantly with different applications, said Bill Brundage, applications manager at Interstate Electronics. "To really achieve the maximum benefit from using a parallel processor, you have to

rethink the solutions to your problem," Brundage said. "If you're not willing to rewrite your code, you're probably not really interested in going to a parallel processing environment."

Quen processors are available with capacities from 80 million to 1.2 billion computations per second, which Johns Hopkins researchers said could now make possible the real-time data compression needed for low-cost satellite transmission of high-resolution television.

The Quen-16 is commercially available now for the family of desktop-size number processors that attach to computers from DEC and Sun Microsystems.

High-end tape drive improves 3480 price/performance 16%

BY ROSEMARY HAMILTON
CW STAFF

Tucked in the large systems announcement from IBM last month was the replacement for the 3480 tape drive.

A company spokeswoman said last week that the new high-end 3490 is intended to succeed the 3480, although the older tape subsystem will continue to be marketed for the near future. The 3480 was introduced in 1985. The 3490 offers an overall price/performance boost of 16% over the 3480, IBM said.

Earlier this year, IBM introduced a lower end 3490 model intended for IBM's Application System/400 users. The A01 and A02 control units and new B04 tape drives are the first 3490

THE NEW high-end 3490 is intended to succeed the 3480.

units for mainframe customers.

The 3490 will take up half the floor space of a 3480 with the same number of tape drives. The new model also comes standard with an automatic tape cartridge loader and the Improved Data Recording Capability, an add-on performance boost. Both are optional on the 3480.

A 3490 with two control units and eight drives, or two full strings of drives, will sell for \$494,000, while a similarly configured 3480 sells for \$556,960. A small configuration, which would include only one control unit and two drives, will cost \$154,000, while the 3480 equivalent sells for \$175,700.

The company spokeswoman said IBM will continue to sell the 3480 for users that need immediate tape drive shipments and

for users that want to fill out strings of 3480 units. The 3490 units will begin shipping at year's end, she added.

Because of the 3490's smaller size, it will also cost less to operate because it requires less cooling and electricity. In addition, it will be offered with a 12-month warranty. The 3480 has a three-month warranty.

HARD BITS

Target Pick

The Ultimate Corp. plans to resell minicomputers made by **Hewlett-Packard Co.** The deal could represent up to \$100 million in future revenue. Ultimate, which has resold Bull H. N. Information Systems, Inc. equipment as well as the IBM 9370, plans to sell the HP systems to the Pick market. Pick is the operating environment developed by Pick Systems, Inc.

Digital Equipment Corp. signed on **Disc, Inc.**, a Nynex company in Baltimore, as part of its Cooperative Marketing Program. Disc makes a cash management system that runs on VAXs.

Stratus Computer, Inc. teamed up with **EDI Solutions, Inc.** to offer the EDI Solutions Editran software on the Stratus fault-tolerant systems. Editran is an electronic data interchange (EDI) translation package. With the Editran software, the Stratus box would serve as a gateway for the inbound and outbound EDI traffic, the company said.

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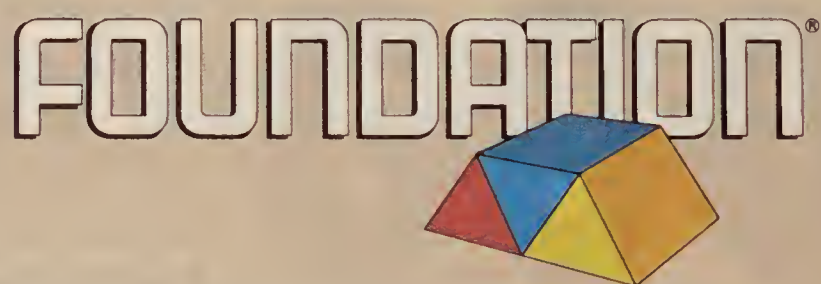
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TI users say they have it now

BY ELLIS BOOKER
CW STAFF

DALLAS — At a time when Texas Instruments, Inc. was promising to bring its computer-aided software engineering (CASE) product more in line with IBM standards such as AD/Cycle, TI users late last month claimed that IBM's product remains a paper tiger in comparison with TI's offerings.

TI said it will add support for OS/2, 3270 communications and IBM Token-Ring networks in the next version of the TI CASE system Information Engineering Facility (IEF), slated for release in mid-1990.

Less than two months ago, TI said IEF will comply with AD/Cycle, IBM's long-awaited Systems Application Architecture-based CASE strategy. Version 4.1 of IEF will also support the Common User Access (CUA) portion of SAA, TI promised.

Company officials indicated that in late 1990, the release of Version 5.0 will support cooperative processing and multiple platforms including Unix, Digital Equipment Corp.'s VMS and eventually, the IBM Application System/400.

While the 200 or so attendees at the conference seemed pleased by TI's repeated commitment to IBM's long-term direction, most said IBM's product trails the maturing IEF, which TI introduced in 1987.

Results to come

"Within three years, IBM will have something to show," said David S. Levine, data administration analyst in the IS department at Sony Corporation of America in Park Ridge, N.J.

An early first user of IEF, Sony now does all of its new development for its IBM 3090 under IEF, according to Levine, who said 50 to 60 of the company's 250 IS staff currently use the CASE product.

For Transworld Airlines in Mount Kisco, N.Y., support for IBM's strategy was a central issue when it elected to use IEF to rebuild its frequent-flight bonus system in 1987.

"We're a major IBM shop, we have an SNA network and SAA is our architectural standard. We would have been very concerned if TI hadn't supported SAA," said Cloene Goldsborough, director of data resource management for airline information services at TWA.

Goldsborough said she was happy with the quality of code generated by IEF, although she conceded that a structured programming methodology takes time to learn and implement.

"AD/Cycle is a framework and standards for [IBM's] repository," said Vaughan Merlyn,

chairman of CASE Research Corp., a Bellevue, Wash., consultancy. "TI has said that as these standards are published it will be compliant. . . . But TI can offer soup-to-nuts technology today."

Still, IBM's repository concept will certainly affect TI's

own tool, which is composed of personal computer-based planning, analysis and design tools and a so-called Central Encyclopedia, a relational repository of business and systems data that resides on the mainframe.

"IBM's repository is a more

general tool than our encyclopedia," said John W. White, president of TI's Information Technology Group. The encyclopedia, he said, could be seen as a subset of an IBM repository.

Earlier this year, TI announced IEF interfaces for IBM's Cross System Product (CSP), the application generator component of AD/Cycle. However, creating similar hooks be-

tween the IBM repository and TI's Encyclopedia will be more difficult, because the information model, which defines data objects and processes inside the repository, has not been as fully specified as for CSP, White said.

The company's goal, according to White, is to provide improvements of fivefold and sixfold in development cycles and the quality of applications code.

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LEVEL5
Information Builders, Inc.

Academia leans on Minnesota super center

ON SITE

BY J. A. SAVAGE
CW STAFF

MINNEAPOLIS — The breadth of the Mississippi River separates the University of Minnesota and the Minnesota Supercomputer Center, Inc. Yet, the private company is central to keeping academic users supplied with the expensive hardware they desire.

In the early 1980s, the university wanted to keep on the sharpest edge of supercomputer technology. "It's an extremely capital-intensive endeavor. Any way we looked at it, that was a recurring theme," said John Sell, president of the center.

The university would never have had enough funds to pay for the supercomputing resources it wanted. So instead of using scarce university resources, Sell spun off the center to sell services to commercial enterprises and use the income to help underwrite academic research.

At the heart of the center is a 512M-word Cray 2, from Cray Research, Inc. Its cooling system — an enclosed fountain of fluorocarbon-based liquid — sits in the middle of the custom-

THE academic world has an insatiable appetite [for supercomputing], but so far we've had the capacity to handle it."

LIZ STADTHER
MINNESOTA
SUPERCOMPUTING
CENTER

made building. The building's heating system functions off the excess heat generated by the high-powered computer — an efficiency welcomed in a Minnesota winter. It is flanked by a Cray XMP and an IBM 4381, which is the front end of the storage devices.

Serving about 100 users per day, the center has a typical time-sharing problem, according to Liz Stadther, director of user services and operations. Stadther and Sell downplayed competition between the university and commercial enterprises for CPU time. "The academic world has an insatiable appetite [for supercomputing], but so far we've had the capacity to handle it," Stadther said.

Both commercial and academic users pay for time on the supercomputers, but the university gets its time discounted, according to Sell. There is no allo-

cation problem, he said, because "the university gets what it pays for."

While not revealing the actual number of clients for the center, Sell said that most were domestic companies. He cited his clients' "sensitivity" in not reveal-

ing their names. "It's a recognition of the fact that supercomputers are an important tool in a competitive world," Sell said.

As a potential proving ground for new technology, the center gets its share of offers for free

equipment from vendors. Some of the systems have been yanked from the center prematurely, such as an ETA Systems, Inc. ETA 10. The company folded earlier this year.

Parallel-processing vendors have been pounding at the cen-

ter's door, figuring that use of their hardware there looks good in their user portfolio, Stadther added. But none have crossed the center's threshold.

There is no set formula to calculate which architecture or which vendor to accept, according to Sell, but he said he expected to embrace parallel processing, despite the current lack of software.

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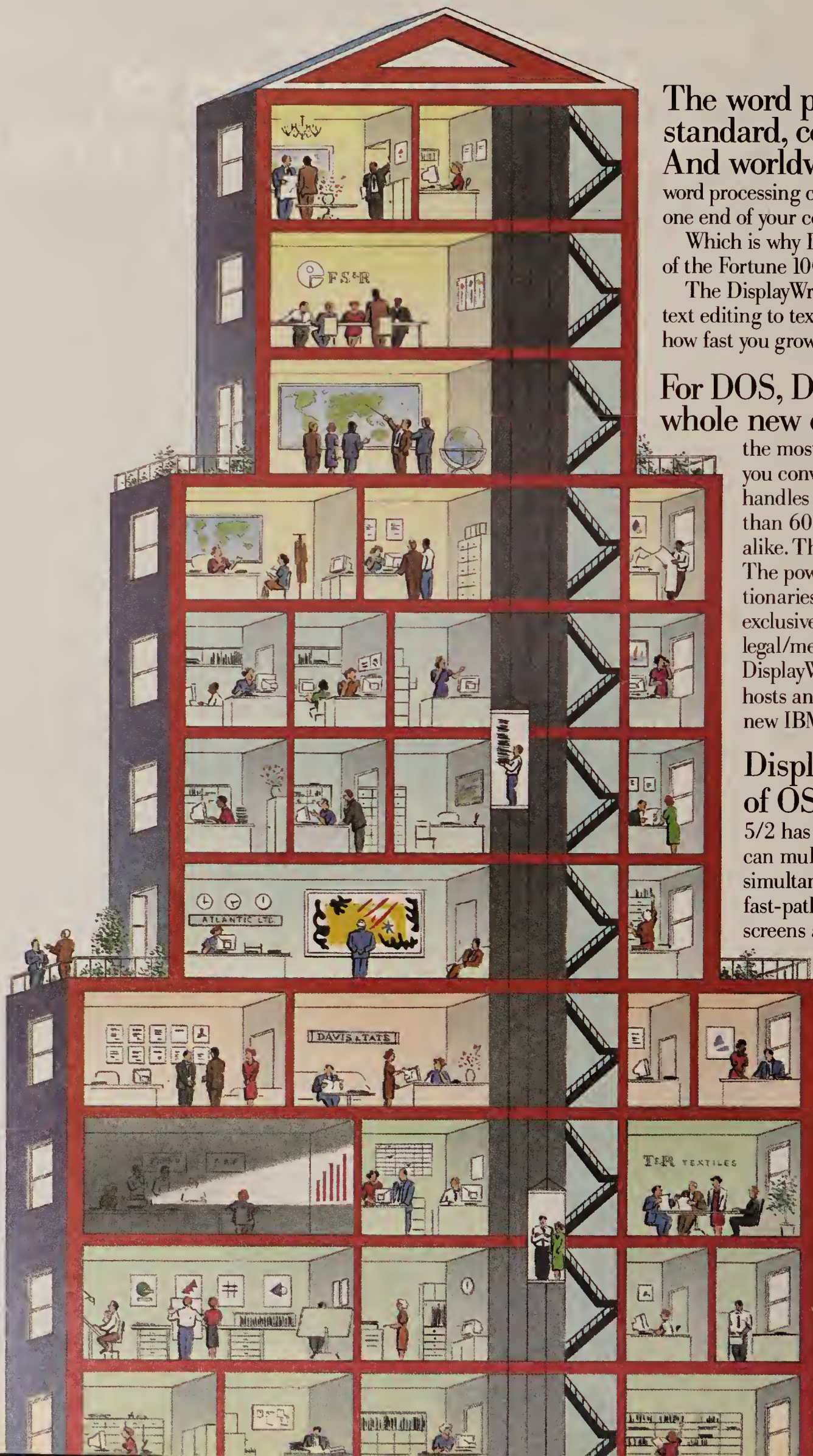
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See IBM's DisplayWrite in action at Las Vegas COMDEX, November 13-17. The solution is at booth 1358, East Hall.

NEW PRODUCTS — SYSTEMS

Data storage

Software Extraordinaire, Inc. in conjunction with Avax International Ltd. has announced a tape backup subsystem that provides unattended backups for the Wang Laboratories, Inc. VS user. The 8mm helical-scan AMW-2300 is said to offer up to 2G bytes of backup on a single tape cartridge.

According to the company, the unit is plug-compatible with the Wang Kennedy IOP or IOC and requires no hardware modifications to the Wang system. The Suprback software reportedly allows backups to be scheduled when no operator is present and offers convenience and security features.

The subsystem lists for \$18,887.

Software Extraordinaire
1419 8th Ave. W.
Seattle, Wash. 98119
206-282-9422

Wang Laboratories, Inc. has announced a combination hardware and software product that provides high-capacity backup and restore capabilities for the Wang VS minicomputer line.

According to the company, the Model 2259V-2MT is an attended backup utility and cartridge tape drive that provides up to 2.3G bytes of data storage space. It operates with all VS computers, except the VS 80 and VS 50 models and can serve as either a stand-alone backup unit or as a supplement to existing storage devices.

The utility costs \$27,900.
Wang Laboratories
1 Industrial Ave.
Lowell, Mass. 001851
508-459-5000

Unbound, Inc. has announced a family of storage products designed for use with Digital Equipment Corp.'s Vaxstation 3100 and Decstation 3100 computer systems.

The 3100-Stor disk drive products are available as internal 3½-in. upgrades or as external 3½-in. and 5¼-in. subsystems, the company said. Pricing for the internal upgrades starts at \$1,460 for a 100M-byte configuration and \$2,880 for a 200M-byte model. External subsystem pricing starts at \$1,835 for a 100M-byte version, \$2,925 for 200M bytes and \$3,500 for a 380M-byte device.

Unbound
17951 Lyons Circle
Huntington Beach, Calif.
92647
800-862-6863

Decision Data Computer Corp. has announced a 16M-byte memory expansion board designed specifically for the IBM Application System/400 Model

lifetime warranty.
Decision Data Computer
100 Witmer Road
Horsham, Pa. 19044
800-523-5357

Processors

A 32-bit general-purpose VMEbus processor board based on Motorola, Inc.'s 68020 chip is now available from Radstone

Technology Corp.

Designated the 68-26, the board was created for multibus systems and is offered with speed options ranging from 16 to 25 MHz. The product supports byte, word, triple byte and long-word transfers on aligned or unaligned boundaries, the company said, and block transfers for the VMEbus are also supported. Priced at \$2,190, the 68-26

comes with two asynchronous serial ports and a parallel interface.

Radstone Technology
20 Craig Road
Montvale, N.J. 07645
800-368-2738

Point 4 Data Corp. has introduced a 25-MHz version of its Mark 386 series multiuser com-

Continued on page 41



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enforcing installation-defined storage standards and protecting data resources. It increases data center productivity by eliminating labor-intensive, error-prone tasks, freeing up valuable staff, as well as by reducing job elapsed times through faster and more efficient sorting.

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With the Cipher 9000 Series 9-track tape subsystem and Tarsus software you can work with over 100 megabytes of mainframe data on a 10 megabyte PC. Quickly. Easily. Inexpensively. And without tying up your mainframes.

The Cipher 9000 Series is a 1/2" reel-to-reel tape system that reads IBM, ICL, UNISYS, DEC and NCR compatible formats. It works with all IBM compatible 286 and 386 PC ATs and XTs.

Working with Tarsus software, the 9000 Series automatically translates data from the tape to the PC. At a speed of five megabytes a minute. Which is 100 times faster than the conventional communication lines on most networks.

Thanks to its menu driven interface and fourth generation query language, Tarsus can be mastered in a matter of hours without advanced technological expertise.

By utilizing prompts, pop-up windows and on-line help, Tarsus



guides users through the tape interrogation process. Allowing them to gather information, produce exception reports and download into databases, word processors or statistical packages such as SAS.

Tarsus also provides a direct import to other DOS applications like Lotus 1-2-3 and dBASE III.

And unlike on-line mainframe transactions, you always have control over what information is

manipulated and by whom.

Find out more about the Cipher 9000 Series and Tarsus software today. Call 1-800-4Cipher and we'll send you a free Tarsus demo diskette along with more information on the Cipher 9000 Series.

It's the best way to get more out of your PCs.

And your mainframe.

cipher

Continued from page 39
puter system.

Based on the Intel Corp. 80386 microprocessor, the Mark 386/25 operates in The Santa Cruz Operation's Xenix System V.2.3 environment and is available in both desktop and tower configurations, the vendor said. The system supports up to 64 users and offers up to 24M bytes of random-access memory. End-user pricing ranges from \$7,400 to \$17,300, depending on model and configuration.

Point 4 Data

15442 Del Amo Ave.
Tustin, Calif. 92680
714-259-0777

Applied Digital Data Systems, Inc. (ADDS) has announced an optional high-speed central processor for its Mentor 6000 Model 2 small business computer systems.

The ADDS Mentor 6000 family of multiuser computer systems is based on the NCR Corp. Tower platform and utilizes a proprietary version of the Pick operating system. The Mentor 6000 Model 2 is available with a 25-MHz CPU, the company said, and includes 32K bytes of cache memory.

Pricing for a base configuration starts at \$23,000 and includes one year's maintenance.

ADDS

100 Marcus Blvd.
Hauppauge, N.Y. 11788
516-231-5400

I/O devices

Advanced Technologies International, Inc. has introduced a 50 page/min. laser printer that offers high-speed text and graphics capability, as well as versatility through a variety of emulations.

Called the LC-6050, the printer reportedly supports a wide range of emulations including the Epson America, Inc. FX-80 and the Hewlett-Packard Co. Laserjet +/500/2000; handles simple and duplex printing jobs on a variety of paper types; and features one 500- and two 1,500-page input hoppers.

Available now, pricing on the system is \$95,000.

Advanced Technologies International

355 Sinclair-Frontage Road
Milpitas, Calif. 95035
408-942-1780

Interface Systems, Inc. has introduced a desktop dot matrix printer for IBM 3270 users, which is said to be compatible with IBM's 3268 and 3287 printer models.

Model 7268 prints draft output at 400 char./sec. and near-letter quality at 100 char./sec. with spacing of 10, 12 or 16.67 char./in., according to the company.

Users can print bar codes and oversize characters without using special software. According

to the vendor, the printer connects directly to IBM 3174 or 3274 controllers via its coaxial port and to IBM Personal Computers and other systems through an RS-232C serial port.

Pricing on the system is \$3,950 per unit.

Interface Systems

5855 Interface Drive
Ann Arbor, Mich. 48103
313-769-5900

Versatec, a unit of Xerox Corp.'s Engineering Systems division, has announced a high-resolution laser plotter capable of accepting as many as six media types.

In addition to standard media such as opaque board, vellum and translucent paper, the Versatec 8836-II laser plotter reportedly draws on double-matte film, tracing paper and Image Elite presentation paper.

According to the company, the unit is especially suited for the computer-aided design and architectural drawing marketplace and is priced at \$39,900. An upgrade kit for the company's 8836 laser plotter is available for \$2,800.

Versatec

2710 Walsh Ave.
Santa Clara, Calif. 95051
800-538-6477

Sony Corporation of America has announced a color video scanner developed for computer graphics, video production, presentation graphics and image archiving applications.

The UY-T55 Flatbed Video Scanner reportedly scans color flat art to capture images in six seconds. Images can be sent to video monitors or video projec-

Continued on page 42



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allowing you to treat the data center as a profit center. And most importantly, you can easily achieve the CICS response times end users expect, enabling you to consistently maintain service level agreements.

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Continued from page 41

tors for live presentations, the vendor said, and the product can interface to a wide variety of display and reproduction devices.

The scanner is priced at \$6,495 and will be available in the fourth quarter of 1989.

Sony
9 W. 57th St.
New York, N.Y. 10019
212-418-9427

Calcomp, Inc. has replaced its 5800 series color electrostatic plotting systems with a family of electrostatic plotters that offer twice the total throughput and enhanced plot quality, the company said.

The new 58000 series plotters reportedly produce dry, wide-format color drawings and are especially suited for applications with complex, multilayer output. The units provide a resolution of 400 dot/in. and include a 32-bit microprocessor and 12-MHz clock.

End-user prices start at \$49,000.
Calcomp
2411 W. La Palma Ave.
Anaheim, Calif. 92801
714-821-2000

Houston Instrument has announced two pen plotters, the DMP-61 DL and the DMP-62 DL.

According to the company,

the drafting plotters feature a standard eight-pen configuration and LCD, as well as roll feed capabilities.

The DMP-61 DL handles 16 standard media format sizes from ANSI A to D, the vendor said, and is priced at \$4,895.

The DMP-62 DL accommodates 23 standard media formats from ANSI A through E and carries a list price of \$6,395.

Houston Instrument
8500 Cameron Road
Austin, Texas 78753
512-835-0900

Applied Computer Sciences, Inc. has announced a line of Hitachi-Koki band printers that have been modified for plug compati-

bility with Wang Laboratories, Inc. VS and OIS computer systems.

The printers are available in 1,500 and 2,000 line/min. configurations, the vendor said, and offer continuous duty cycle printing with no preventive maintenance. Suggested retail pricing for the 1,500 line/min. model is \$28,000, and the 2,000 line/min. version is priced at \$36,000.

Applied Computer Sciences
12910 Totem Lake Blvd.
Kirkland, Wash. 98034
800-525-5512

Power supplies

Electronic Specialists, Inc. has

expanded its line of computer and industrial grade AC power regulators and conditioners.

With the addition of a proprietary Isolator output design, the company reports that it is now able to provide 10 models sized to accommodate most high-technology applications. Regulated output is 117 VAC plus or minus 4% for a 90 to 140 VAC, 60-Hz line input range.

According to the company, standard and Isolator models are available in 250, 500, 1,000, 1,500 and 2,000 W ratings.

Pricing begins at \$400.
Electronic Specialists
171 S. Main St.
Natick, Mass. 01760
800-225-4876

NEW PRODUCTS — SOFTWARE

Database management systems

Compuserve Data Technologies has announced a revised version of its fourth-generation language/relational database management system for the Digital Equipment Corp. VAX/VMS computing platform.

System 1032 Version 8 is targeted toward complex, query-based applications, the vendor said, and now includes a debugger, the Collect command, shareable procedures and increased security functions. Slated for availability in December, first-copy licenses range from \$3,000 for a DEC Vaxstation to \$180,000 for a DEC VAX 8840.

Compuserve
1000 Massachusetts Ave.
Cambridge, Mass. 02138
617-661-9440

Wang Laboratories, Inc. and Answer Systems, a division of Sterling Software, Inc., have announced a jointly developed software package that allows Wang VS computer users to access corporate mainframe data for use on departmental-level systems.

The Pace/Answer Connection reportedly integrates Wang's Pace application development and relational database management system with Answer System's Answer/DB, a mainframe database access tool. The product permits users to directly access information residing in IBM's DB2, IMS and VSAM data files. The program is licensed at \$7,500.

Wang Laboratories
1 Industrial Ave.
Lowell, Mass. 01851
617-459-5000

Services

Price Waterhouse has signed an agreement with Software Leasing Corp. in Beverly Hills, Calif., a company offering leases on

software, software maintenance and other support services.

Software Leasing reportedly offers capital and operating leases with terms ranging from 12 to 60 months and with funding available for \$50,000 to \$5 million packages. Packages can include hardware, software, consulting, maintenance, training and support services. Custom leasing options are available.

Price Waterhouse
Applied Technology Center
P.O. Box 30004
Tampa, Fla. 33630
813-287-9200

Sungard Recovery Services has introduced a disaster recovery capability aimed at IBM's Application System/400 midrange computer series.

The AS/400 service allows users to sustain operations in the event of a data center outage, the company said. It includes immediate access to a fully equipped hot-site facility for six weeks and the availability of ready-conditioned space for an additional six months.

The initial AS/400 disaster recovery configuration will be installed at Sungard's Philadelphia location, with additional systems planned for the company's Chicago and San Diego facilities.

Sungard Recovery Services
1285 Drummers Lane
Wayne, Pa. 19087
215-341-8700

Compilers

Language Processors, Inc. (LPI) has released Version 3.10 of its Fortran-77 compiler product.

The new extension reportedly includes the Complex 16 data type, optional range checking of array subscripts, full support for Unix pipes and extended initial options for noncharacter variables. The compiler is available to run on Intel Corp. 80386-based systems under Unix and Xenix, AT&T's 3B2, Motorola, Inc.'s 68000 series architecture

and the reduced instruction set computing-based 88000 processor.

Pricing starts at \$995 and varies according to system configuration.

LPI
959 Concord St.
Framingham, Mass. 01701
508-626-0006



Acucobol-85 includes an interactive source debugger

Acucobol, Inc. has announced that its portable Cobol compiler product is available for Digital Equipment Corp.'s entire line of VAX and reduced instruction set computing (RISC) systems.

Acucobol-85 allows DEC VAX/VMS Cobol applications to be run in the DEC RISC environment, the company said. The product reportedly includes an interactive source debugger, pop-up windowing, color and line drawings. Development system pricing ranges from \$1,500 to \$12,000.

Acucobol
Suite 201
7950 Silverton Ave.
San Diego, Calif. 92126
619-271-7097

Software Translations, Inc. has released Version 7.5 of its B-Tran Basic to C translator.

B-Tran translates Quickbasic Version 4.5 and Basic 6.0 to C, the firm said, and is available for machines running DOS, AT&T Unix System V, Xenix, IBM AIX, Ultrix and Digital Equipment Corp.'s VMS. It reportedly

retains the original structure and appearance of a professional C program and costs from \$499 for the Microsoft Corp. C compiler under DOS.

Software Translations
The Carriage House
28 Green St.
Newburyport, Mass. 01950
508-462-9198

Development tools

Centura Software, formerly Application Development Systems, Inc., has announced a Cobol code analyzer for software maintenance and re-engineering on IBM mainframe computers.

Navigator/MF runs under ISPF and is used to interactively analyze any OS/VS Cobol or VS Cobol II program. It allows for identification of dead code and provides the ability to find all logic paths between any two points. It extracts a program's underlying structure and reformats it into a logical view tree diagram, the firm said. Slated for December availability, it costs \$45,000.
Centura Software
6840 78th Ave. N.
Minneapolis, Minn. 55445
800-358-3048

V.I. Corp. has enhanced its family of Data Views software tools for developing graphical user interfaces.

The tools, which run on all AT&T Unix System V and Digi-

tal Equipment Corp. VAX/VMS platforms, now offer support for most reduced instruction set computing-based systems, including those from Data General Corp. and Tektronix, Inc.

The software responds to data as it is changing in real time and simultaneously maintains a dialogue with the operator via graphical input techniques, the vendor said. Version 7.0 includes an object-oriented approach for hierarchical grouping of screen handling, as well as extensions for window system event handling.

The product costs \$17,700, and users with a current maintenance contract can receive an upgrade at no additional charge.
V.I. Corp
Amherst Research Park
Amherst, Mass. 01002
413-253-3482

Utilities

Mackinney Systems has announced a software program designed to write all CICS log entries to a single VSAM file and provide on-line display and printing functions. Called CICS/Log View, the program runs under CICS in both DOS and IBM MVS environments. Help screens and program source code are provided. The product is priced at \$495 for purchase and \$195 for annual lease, and a free 30-day trial is available.

Mackinney Systems
Suite 103
2740 S. Glenstone
Springfield, Mo. 65804
417-882-8012

Raxco Software, Inc. has announced the release of Version 4.5 of its Rabbit-5 High Speed Backup software for Digital Equipment Corp.'s VAX/VMS systems.

According to the company, the software offers automatic tape selection and labeling, file access and modification while backing up, and checks for user privileges and file protections prior to file information display.

Licensing costs are based on
Continued on page 43

Continued from page 42

the processor used and the number of nodes supported. Group 1 licenses, including DEC Microvax II, VAX 11/730 and 11/750 series systems, are priced at \$1,995. Group 5 licenses for 6000 series systems have a price of \$8,995. Educational discounts are available.

Raxco
Suite 200
2440 Research Blvd.
Rockville, Md. 20850
301-258-2620

Computer-aided software engineering

Software AG of North America, Inc. has released two integrated computer-aided software engineering (CASE) products for IBM's DB2 database management system.

The latest version of the Natural Architect Workstation front-end design tool supports the generation of diagram-driven schema specifications for IBM DB2 and other SQL-based DBMSs. Natural Construct, a model-driven application generator, reportedly generates complete DB2 systems from interactive dialogues. Both products were designed to work in conjunction with the firm's existing Natural DB2 programming data administration package.

Natural Architect Workstation is priced from \$6,000 to \$30,000, and Natural Construct is priced from \$8,000 to \$54,000.

Software AG
11190 Sunrise Valley Drive
Reston, Va. 22091
703-860-5050

Applications packages

Trax Softworks, Inc. has enhanced its Edword word processing software and ESS electronic spreadsheet package to offer support for XA in an IBM CICS environment, the company said.

The CICS/XA versions of Edword and ESS reportedly permit as many as 40 concurrent users under one CICS region.

A perpetual license for ESS ranges from \$9,000 to \$16,000; Edword ranges from \$6,500 to \$11,500. Pricing is dependent on CPU size.

Trax Softworks
10801 National Blvd.
Los Angeles, Calif. 90064
213-475-8729

Bradford Information Systems has announced that its Interactive Distribution Planning System (IDPS) for truck routing optimization is now available for IBM RT workstations.

The software application was designed for distribution network optimization and modeling, the vendor said. Features in-

clude a database with more than 4,000 cities and towns, a graphical display of routes designating optimal delivery sequence, 32 chart formats and statistical analysis capabilities.

A single copy of IDPS costs \$100 per point for the maximum size routing problem to be solved, plus \$1 for each city or town location accessed from the database.

Bradford Information Systems
6612 Lexington Road
Austin, Texas 78731
512-459-8999

Magnavox Electronics Systems Co. and McDonnell Douglas Information Systems Co. have announced the Contracts Processing System, a jointly developed system that has been designed to

automate contract processing for firms working for the U.S. Department of Defense.

The product was designed to update changes to contracts as well as provide documentation for all contract phases, including the areas of pricing, traffic and shipment, billing, order entry, procurement and quality assurance.

The system is configured to

comply with Federal Acquisitions Regulations requirements, and the base price is approximately \$200,000 for the initial license.

Volume discounts are available.

McDonnell Douglas
P.O. Box 6011
5701 Katella Ave.
Cypress, Calif. 90630
714-952-5709

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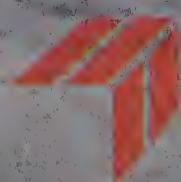
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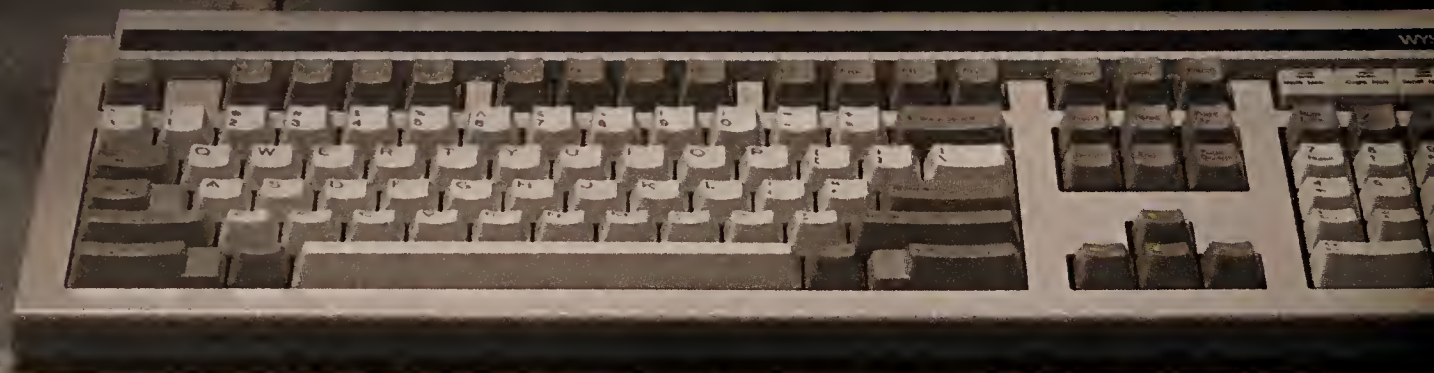
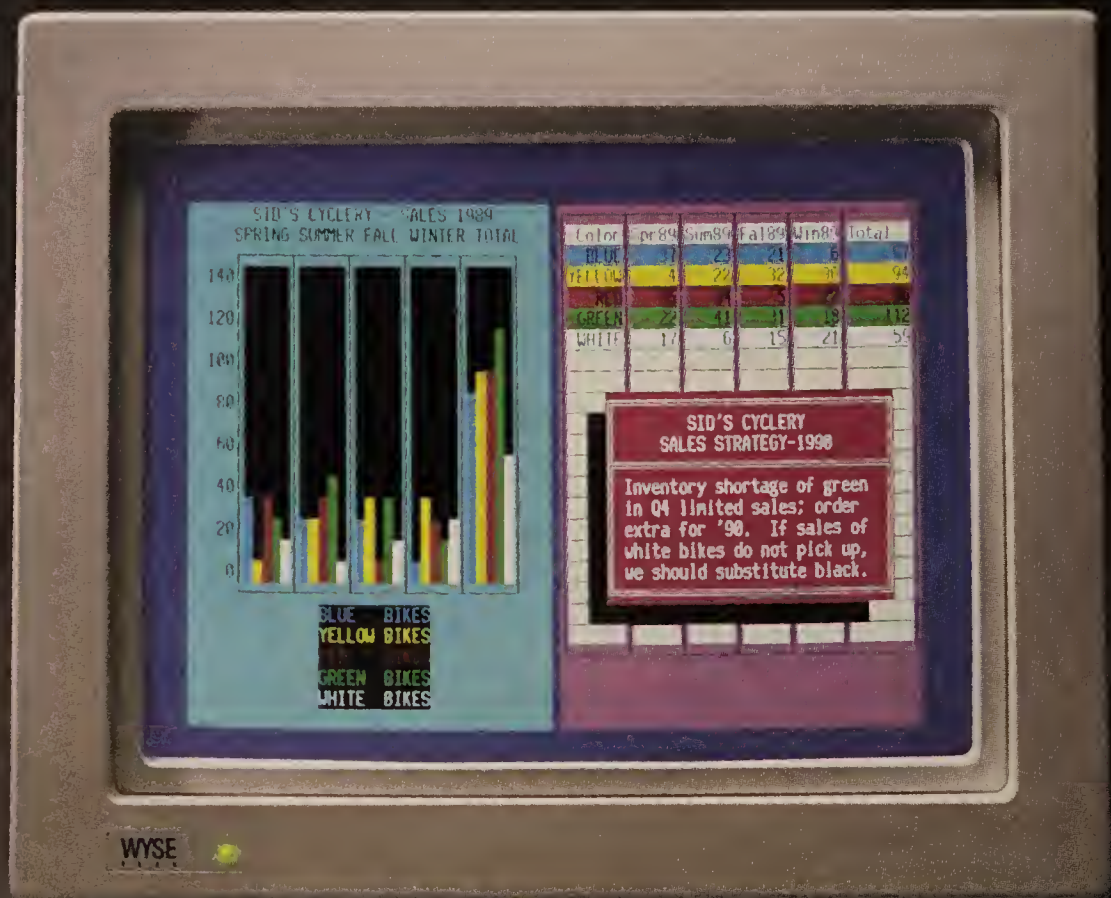
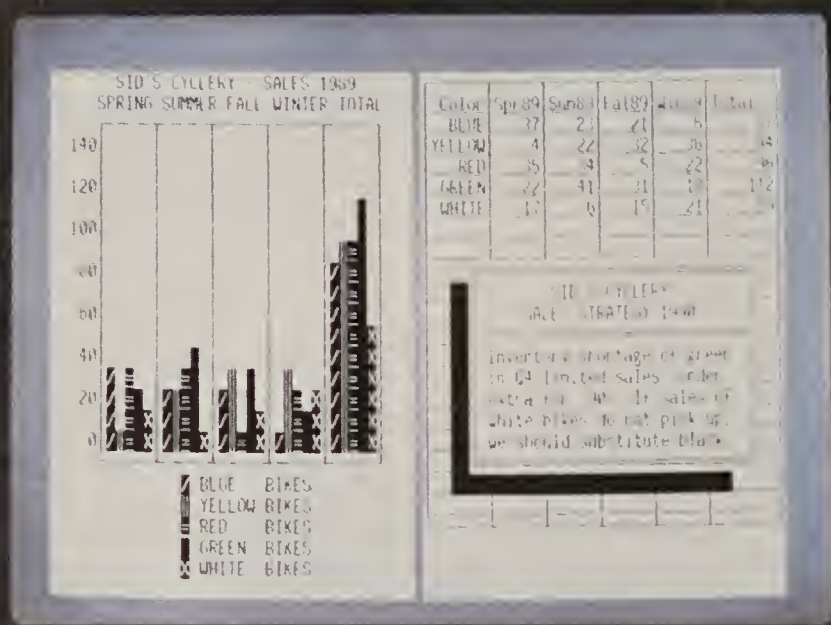


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It's how
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can read.



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Few terminals—even monochrome—do as much. The WY-370 supports multiple display formats, high resolution characters, dual host/dual sessions, and operator defined horizontal and vertical windows. But no matter how complex you make the display, the WY-370 makes it simple to read.

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PCs & WORKSTATIONS

M I C R O B I T S

Patricia Keefe

Not a very brite lite



It may be less filling, but I doubt it'll taste too great.

The so-called PM Lite is one bizarre idea, spawned by the frustrations of several software heavyweights who plain and simply bet on the wrong horse for the short term, and the worries of IBM, a whale of an industry heavyweight who fears delays in executing its long-term enterprisewide product strategies.

The bee in these distinguished bonnets is the fact that Windows for DOS took off — if you can say that about a product that took a total of six years to spark user and developer interest.

Users just don't hear the siren call of OS/2 that seduced the likes of IBM, Lotus, Borland and others. And that shouldn't have come as such a surprise, considering how long it has taken them to warm up to Windows. Yet it's driving these vendors bonkers.

But why should users migrate? You can say what you want about the price of memory coming down and the availability of an OS/2 desktop for \$4,000, but users I've talked to

Continued on page 53

Patch of blue in a foggy outlook: high-end PCs

ANALYSIS

BY PATRICIA KEEFE
CW STAFF

It has certainly been a down year for much of the computer industry, never mind the stock market. And there doesn't appear to be much relief in sight, except perhaps in the personal computer arena.

Much attention has been riveted on the minicomputer market blues and the melancholy quarterly reports from big-iron makers such as IBM and Digital Equipment Corp. Meanwhile, PC growth hasn't exactly left investors whistling Dixie. But that

may be only temporary.

Sure, a recent report from Prudential-Bache Securities, Inc. predicts revenue growth will continue to spiral downward, dropping from 1989's estimated 18% revenue growth and 17% unit growth and 1988's 23% revenue growth and 22% unit growth.

Prudential-Bache analyst Kimball Brown has projected 15% revenue growth and 13% unit growth for next year. At first glance, these figures are nothing even to hum about. Yet despite this sluggish performance, the PC industry should grow by \$5 billion.

Brown implied the situation

would be worse were it not for the impact of the coming onslaught of Intel Corp. I486-based computers. "We believe that the PC market is only in a lull, waiting for new 486-based PCs to be

introduced," he said.

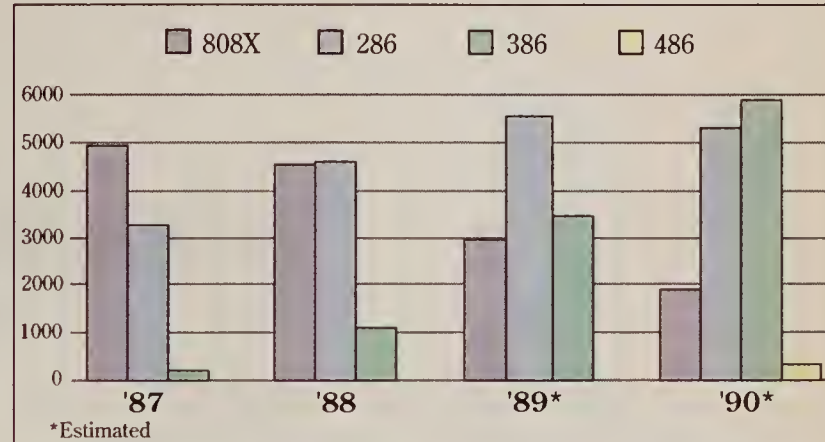
The market is under siege from a locust-like plague of 80486 product announcements, ranging from computers to

Continued on page 52

The Intel Shuffle

Just as Intel Corp. I486-based systems start to appear, the 4-year-old Intel 80386 chip will finally surpass the 80286 in 1990

SHIPMENTS IN THOUSANDS



SOURCE: DATAQUEST INC., PRUDENTIAL-BACHE SECURITIES

CW CHART: SHELLEY BRENNER

Acer falls in step with pack of EISA, 486-based micros

BY JAMES DALY
CW STAFF

SAN JOSE, Calif. — Acer America recently joined a sprouting field of vendors offering platforms based on the Extended Industry Standard Architecture (EISA) and Intel Corp.'s I486 microprocessor with the rollout of a personal computer based on both designs.

The Acer 1200 follows by two weeks Hewlett-Packard Co.'s highly touted introduction of its Vectra 486 PC, which also employs both the EISA standard

and the I486 chip [CW, Oct. 16]. The EISA standard was created by a high-profile faction of nine companies that are trying to thwart IBM's plan to set a new bus standard through its Micro Channel Architecture (MCA).

Acer's box runs at 25 MHz and is capable of providing 11 million instructions per second, officials at the Taiwan company said. Additionally, the standard system memory configuration starts at 4M bytes and can be expanded to 64M bytes.

The basic 1200 system begins at \$10,995 and is scheduled

for availability in the first quarter of 1990. A file server version is scheduled for the second quarter of next year.

EISA competitor

At the same time, Acer announced an add-on multiprocessor upgrade board based on the IBM MCA with which EISA is designed to compete. Acer Application Processor (AAP) reportedly can be installed in any MCA-based IBM Personal System/2 compatible built around an Intel 80386 chip.

Acer claimed that the AAP is unique in that its dual-port architecture features local memory and lets it be used as an open-architecture product. Coprocessor boards offered by competitors work only with a vendor's pro-

prietary systems.

However, Acer said the product will not be available until the second quarter of 1990 and declined to release pricing. The initial version of the board is available with multiprocessor Unix kernel software. The company said that future releases will include a multiprocessor version of The Santa Cruz Operation's SCO Unix.

Inside

- Managers can say good riddance to storage responsibilities with SMS. Page 51.
- Lotus 1-2-3/G drops a veil in London. Page 51.
- Have yourself a merry little Mac promo. Page 54.

Presentation Manager Arrives For Micro Focus COBOL/2 Programmers!

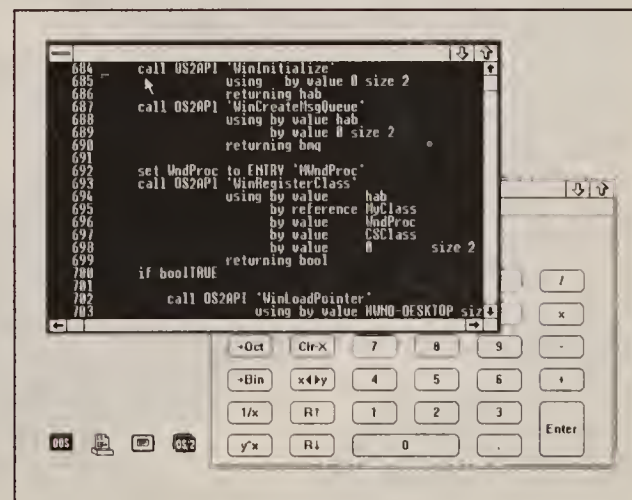
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PC WEEK\CONNECTIVITY\NETWORKING

FIRST LOOK

DCA's Convertible: Is It IRMA? Or Sybil?

By David Strom

Though officially dubbed the IRMA 3 Convertible, a more accurate moniker for the new multiple-personality board from Digital Communications Associates Inc. (DCA) would be Sybil. A few deft twists of the wrist, and the board adopts whatever persona or configuration is needed at that moment.

The wealth of choices—Micro Channel or AT bus, coaxial or twisted-pair cabling, IBM- or IRMA-style emulation—makes DCA's board an engineering marvel. At the same time, however, the Alpharetta, Ga., firm wisely borrowed some tips from its competitors. For example, it uses single application-specific chips à la Novell Inc.'s PCOX, a nifty configuration utility à la Attachmate Corp.'s board, and two items found on many products: a built-in balun for twisted-pair wiring and downloadable microcode that makes upgrading firmware less painful.

But one thing the Convertible has that all others lack is the ability to run on all current PCs—Micro Channel architecture (MCA), PC and AT alike. And switching from classic bus to MCA takes even the most fumble-fingered user just a few minutes: Simply remove the back-edge connector, flip a series of switches, invert the business end so that the coax Bayonet Nut Coupling connector is aligned with the rest of the card, and put everything back together.

We tried several 3270 software packages, including DCA's e78, e78 Plus and Crosstalk Mk.4, Relay Communications Inc.'s Relay Gold, Attachmate's Extra! and IBM's 3270 Emulation Program version 3.0. When the Convertible was configured as an IBM board supporting distributed-function terminals, the IBM, Attachmate and Relay emulation software worked flawlessly on both machines; this included the multiple-session support that Extra! provides.

TSO IND\$FILE file transfer also worked well with the IBM and Attachmate products.

As far as we could determine, our software functioned identically when the Convertible board was swapped for IBM 3270 hardware. All we needed to do was

download the ap

All three DCA

lay, functioned we

the board to run as

(CUT)-mode IRMA

were unable to ru

ured as a CUT-mod

DCA's IRMA 3 Convertible Rides Either Bus

It's Simple To Switch from Standard Bus to MCA

1) Flip switches and jumpers.

Switches change the board's personality from AT bus to MCA. Jumpers enable it to use either coax or twisted-pair cabling.

2) Invert the BNC connector.

Since the board will be placed upside-down in the machine, the connector must be rotated so that it aligns with the rest of the card.

3) Attach blue plastic card tabs.

These align the board in the MCA machine.

4) Attach a metal back-edge connector.

This holds the board in place in an MCA slot.

5) Insert the board.

6) Configure software.

Download microcode to the board to specify either IBM or IRMA personality.

DCA/IRMA 3 Convertible

DCA

Customer Representative
Marketing Information Group

1000 Alderman Drive
Alpharetta, GA 30201-4199
1-800-241-4762, Ext. 55
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A 3½-inch 1.44-MB Diskette Drive lets you run your MS-DOS office software when your office is on the road.

favorite software using 3½-inch diskettes. And keep the home office in the loop with an optional 2400-baud internal modem. Your fingers will feel at home on standard-spaced keys and an embedded numeric keypad. And your eyes will rest easy on a backlit screen that's easy to read in any light.

All this runs for more than 3½ hours on a small, yet very powerful battery pack. Recharging is fast, and changing to a spare is easy. You can even run your PC off AC power, or from your car's cigarette lighter with an optional adapter.

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At 8½ by 11 inches, the new COMPAQ LTE/286 and COMPAQ LTE are small enough to take everywhere.

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COMPAQ LTE/286 If you need battery-powered 286 performance in a laptop that fits in your briefcase with room to spare, this is it. Measuring just 8½ by 11 inches and weighing but 6 pounds, it's a lot of PC in a little package.



COMPAQ SLT/286 If you need the ultimate in full-function 286 laptop computing, get hold of this. You'll find VGA graphics, a 40- or 20-MB Fixed Disk Drive, a detachable keyboard and up to 3.6 MB of memory. All running on battery.



COMPAQ PORTABLE III If you need a rugged, expandable, 286 portable, you've got it. Its crisp gas plasma display, fixed disk drive options, expandable RAM and optional expansion slots give you a handle on the functionality of a desktop PC.



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COMPAQ

It simply works better.

S M A L L
T A L K

Douglas Barney

Spare me
the hype

In most industries, consumers rarely fall for the "new improved" labels that companies throw on

things. The veteran shopper knows it's just the same old stuff in a new box that some slick marketer stuck a new label on.

The computer business is different. In the computer business, even the most transparent hype has an effect on a large number of customers. They believe it.

It doesn't take much to get people excited. Adding menus to an outdated program will do it. So will a new PC that is little more than a repackaged old PC.

But the strangest thing people get excited about is a faster chip that is not particularly interesting. Most reasonable people would have a hard time spending more than 30 seconds explaining what's so great about a chip that is 10% faster than its predecessor.

Vendor-hype machines believe differently. They think that announcing an extra megahertz or two is about the wildest thing that could possibly happen. All too often, the so-called opinion leaders agree.

IS doesn't buy it. They've been burned. They've been misled. And now they are taking a hard line. They buy what they want to buy and disregard the chest-pounding.

The only ones paying attention are publicity-starved analysts and consultants, vendor marketing VPs and newer, naive PC buyers.

Since IS has stopped listen-

Continued on page 54

Micros offer niche for data storage

ANALYSIS

BY RICHARD PASTORE
CW STAFF

System software has taken on more and more responsibility for data storage and backup in the mainframe world for years. But as personal computer networks propagate and network data proves more difficult to manage, systems managed storage (SMS) is finding a role in the microcomputer world as well.

SMS software continually monitors data files, deciding when and where they should be stored. For example, an SMS program could identify files on a hard disk that have not been touched for 90 days and transfer those files to tape.

In so doing, the program keeps the hard disk free of clutter and protects files from possible corruption. It also relieves the end user and the information systems staff from the burden of file maintenance and backup.

Though there are only a handful of dedicated SMS products available now, observers expect user demand to nudge more

players into the market in 1990. Eight to 10 storage sector firms will announce SMS products next year, according to Mike Peterson, president of Peripheral Strategies, a data storage research and consulting firm in Santa Barbara, Calif. Analysts expect few differences in functionality among these upcoming proprietary products.

Currently, the SMS market is not developed enough to support more than a handful of vendors, said Jay Bretzmann, an analyst at Framingham, Mass.-based International Data Corp. But that will change as PC networks multiply and increase in size.

SMS would relieve network managers of much of the storage responsibility, "and I'm sure they'll say good riddance," Bretzmann added.

The need for SMS is currently concentrated in networked PC environments, but in a couple of years, the need will migrate down to high-end stand-alone machines, analysts said.

"When you are up in the range of 60M to 80M bytes, managing the data on the hard disk becomes such a formidable

task that people don't want to attempt it," Peterson said.

Consequently, forgotten but potentially valuable files often sit among hundreds of others on the disk, at risk of corruption from viruses and other threats. SMS "would alleviate certain data losses and lost productivity from such mishaps," Bretzmann said.

A keen idea

IS managers may be keen on the idea of SMS. T. Ray Lollar, vice-president of information services at Atlanta-based Gold Kist, Inc., said his firm would definitely benefit from SMS. With 500 PCs, many of them networked, managing the data "isn't an easy task," Lollar said.

One of the few firms championing Lollar's and other LAN managers' cause is Emerald Systems Corp. with its Ramp software. The family of five programs manages storage and provides both centralized and distributed backup for data on Novell, Inc. Netware PC networks.

San Diego-based Emerald, which has between 30,000 and 40,000 Ramp products installed,

last month began a crusade to establish Ramp as a standard. It is offering the software product to tape drive and PC OEMs for bundling. Emerald said it will announce its first OEM today at the Compaq Computer Corp. press event in Houston.

Analysts praised the standardization efforts, saying it will benefit users and managers of multiplatform PC networks. But they are not certain a single firm can pull it off. "I don't know whether it will ever happen," Peterson said. "The economics of offering proprietary systems are working against it."

Emerald's chief rival, Marlboro, Mass.-based Sytron Corp., considers its longer established SMS products for stand-alone PCs to be the industry standard. Sytron boasts an installed base of 620,000 units and said it licenses its Sy-tos software for resale to 16 computer manufacturers, including Compaq and Dell Computer Corp.

The latest version of Sy-tos, announced last month, provides automatic backup of files to any and all tape storage devices, the company said. A network version of the software is planned for the second quarter of next year, a spokesman added.

Lotus lifts shroud around
1-2-3/G strategy, detailsBY RALPH BANCROFT
IDG NEWS SERVICE

LONDON — Lotus Development Corp. chose the recent OS/2 User Show here to provide the first public peek behind the veil of secrecy shrouding 1-2-3/G, its OS/2 Presentation Manager version of its spreadsheet.

Frank King, senior vice-president of Lotus' Software Product Group, took the opportunity to highlight the product's strategic importance and demonstrate new features.

"We are showing 1-2-3/G for the first time in some detail," King said. "We have spent \$45 million on OS/2 development

work and have 150 programmers working on it. It is a major investment for us," he added.

King said the product is about to go into beta test but was wary about putting a shipment date on 1-2-3/G because of previous premature announcements.

In a dry run of the presentation that the firm is planning to make at Comdex/Fall '89 in Las Vegas next week, King also talked publicly for the first time about Notes, which allows networked users to edit, annotate and share documents.

There were rumors that the project had been effectively killed. If so, then King revived it. He confirmed that Notes is in

beta test and will be "off the vaporware list" shortly.

UK beta testers said the product is stable. However, some of these were using a Microsoft Corp. Windows-based version of Notes, whereas King spoke only of an OS/2 version.

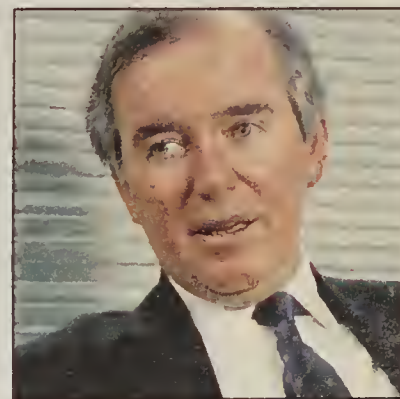
"The impression I get is that Lotus won't actually launch Notes. Instead, they see it as a key accounts type of product and will only let you have it if they are satisfied that you really need it and can support it," one beta tester said.

King dubbed 1-2-3/G's "solving" technology its most exciting new feature. A feature called Back Solver reverses the usual what-if calculation.

The solving technology is an equation-based background task that runs as a separate thread. If one of the constraints is changed, the Back Solver will

automatically recalculate the worksheet.

Lotus 1-2-3/G will fully exploit all the features of Presentation Manager. But while it uses



Lotus' King extolled 1-2-3/G's virtues at public demonstration

PM's graphical user interface, it is implemented so that it will not require extensive retraining. All existing 1-2-3 commands will work with 1-2-3/G.

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PC outlook

FROM PAGE 47

cards, featuring either Micro Channel Architecture (MCA) or Extended Industry Standard Architecture (EISA) bus standards. The wave of introductions will reach its apex at next week's Comdex/Fall '89 trade show in Las Vegas.

The way Brown explains it, the primary driver of PC demand is better price/performance. "We expect the December quarter to usher in increased performance and lower prices, [thanks to] the new 486-based PCs."

Prudential-Bache divides the PC market into two sectors: the low-end, price-sensitive segment and the high-end, feature/function segment.

Brown predicted that 486-based PCs will have the dual effect of providing high-margin functionality to the high end, while forcing price cuts to the current offering.

This has already happened in earlier generations, particularly with the arrival of Intel's 80386SX chip, which touched off a price war in the 286 market this summer.

Signs of a repeat in the 386 market are already appearing. The current price-sensitive market has moved up to 20-MHz 386-based PCs, Brown said.

Advanced Logic Research, Inc. (ALR) in Irvine, Calif., is one example. ALR announced its 486 product plans two months ago; last week it lowered prices by as much as 21% on its 10-member line of 25-MHz and 33-

MHz 386-based Flexcache systems. Dave Kirkley, ALR's vice-president of sales, attributed the reductions to the new I486 products and recent cost savings on random-access memory.

"Today's action will no doubt put pressure on the competition," he predicted, also claiming that ALR's 25-MHz and 33-MHz 386 products are now up to 36% less expensive than comparable Compaq Computer Corp. Desktop models.

The impact of price cuts such as these will be to jump-start the price-sensitive segment of the market, hence boosting unit sales, Brown said.

A secondary driver of PC demand will be the availability of new applications that make PCs more useful, for example, programs that take advantage of Microsoft Corp. Windows, OS/2 and Presentation Manager. So far, introductions in these areas have been meager, but the pace is expected to pick up in the next three to six months.

Brown forecasted another two years of waiting before OS/2 matures. In the meantime, Windows software will pick up the slack: "In 1991 we expect OS/2 to stabilize and attract industry-wide applications and user support. Until then, it appears that developers are increasingly stepping up MS Windows applications development and putting OS/2 development on the back burner."

Tool makes printers plot

BY RICHARD PASTORE
CW STAFF

EMERYVILLE, Calif. — If you can't put up with the plodding pace of a plotter, use a printer instead. Such is the advice of Insight Development Corp., which released a version of its plotter emulator package for use with both Digital Equipment Corp. LJ250 and LJ252 ink-jet printers.

The Printaplot program allows the DEC printers to emulate a conventional pen plotter but at 10 times the speed, according to Doug Cole, executive vice-president of the Emeryville-based company.

Earlier versions of the product support all HP ink-jet and laser printers and compatibles as well as popular dot-matrix printer models.

"What might take an hour on a plotter you can do on a laser printer in seconds and on an ink-jet printer in minutes," Cole said.

Printaplot for the DEC LJ250 and LJ252 is available through both DEC and Insight Development. It carries a price tag of \$199.

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Keefe

CONTINUED FROM PAGE 47

are gagging on the idea of 8M to 10M bytes per desktop. Not only that, they want to preserve their installed base of hardware *and* software. OS/2 Standard Edition 2.1 offers users a slight break on memory with an expanded DOS compatibility box, but it's not enough.

OS/2 is just too darn big.

Certainly, there are users with a need for OS/2, but they tend to be the minority or the pilot project in an enterprise otherwise moving to Windows.

Meanwhile, millions of dollars in development work is starting to pile up in your back room. What to do, what to do.

Well, first you pout publicly. Then, you could concoct an idea like PM Lite and leak it to the press to see how it plays with the PC community (I'll bet anything IBM has gotten a stinging earful). Or, you could just whip out your pruning shears and cut OS/2 back into some semblance of a manageable environment.

The gist of PM Lite is that you'd take a subset of the bulked-up OS/2 graphical interface and run it under DOS. So what does that buy you? Allegedly, multitasking. A lot of the developers I've talked to are highly skeptical. DOS is a single-user, single-tasking operating system. The point of OS/2 was to move to a multitasking, multiuser environment.

You'll also get the ability to run your DOS application unmodified. Gee, that's quite a concession considering the native environment is DOS.

Supposedly, we'll also get an easier migration path to OS/2 because developers will write one application that will run under DOS or OS/2. This is good news for developers who went with PM. It means they can tweak their PM software to run under Windows, thereby shortening the competition's lead time. And since many PM packages reportedly only utilize the common set of PM program calls, they'll allegedly fit under PM Lite. Or so I'm told.

MICRO BITS

Type Director deal offered

Aldus Corp. is now packing discount coupons for **Hewlett-Packard Co.**'s Type Director, a font scaling and management program, in MS-DOS versions of Aldus Pagemaker 3.0. The coupon entitles customers to purchase Type Director and eight scalable typefaces for \$39.95.

The first **Borland International** Paradox Users conference is slated for April 29 to May 2 at the Monterey (Calif.) Convention Center. The agenda will cover issues of interest to developers and users, while industry luminaries and senior Borland executives will discuss the future of database technology. Call 800-544-4569 for information.

Soft Warehouse, a computer retailer, and **Intel Corp.** have launched a nationwide on-site service and support program for IBM-compatible personal computers. Flexible On-Site Computer User Support (Focus) is available to anyone who buys a PC from the retailer.

I have trouble buying that. First off, adding a selection of programming calls and the ability to multitask can't help but suck up memory, putting pressure on the applications. Second, anyone who ports a DOS application to OS/2 is doing so presumably to take advantage of what OS/2 has to offer. The result should be a far richer product. It seems to me, and to some developers, that you would have to cripple your PM application to get it to run under PM Lite. There, it would be trapped in this never-never land of more than DOS but not quite OS/2. In these cases, users would not be spared buying a second version of their software.

Nor would users be spared the confusion that allegedly has kept them from buying OS/2 PM (but obviously not Win-

dows). One school of thought has it that users are not migrating to OS/2 PM because they are confused by Windows (or maybe they just know what they need.)

Of course, if they are confused, or merely just divided internally into warring camps, a third, kludged interface that is neither here (DOS) nor there (OS/2) is not going to ease anyone's decision-making process.

Still, there's a germ of common sense here, and Microsoft's Senior Vice-President of Software, Steve Ballmer, who has Windows 3.0 to think about, has admitted as much.

Now, you might be wondering whether it wouldn't just be simpler to look at why people won't go to OS/2, and just address those issues. Right off the bat,

you hit size. According to Ballmer, who declined to say whether IBM has discussed PM Lite with Microsoft, the two have tossed around the idea of slimming down OS/2 itself.

I should hope so. Fact is, each version of OS/2 is getting progressively smaller, according to Ballmer. But Microsoft and IBM need to dramatically whip their pudgy prodigy into shape. And they need to do it together, as a team. If they don't, an OS/2 standard is jeopardized, and then where are all those PM developers? They might do well to heed the following admonishment: Be careful what you wish for; you might get it.

Keefe is a *Computerworld* senior editor, PCs and workstations.

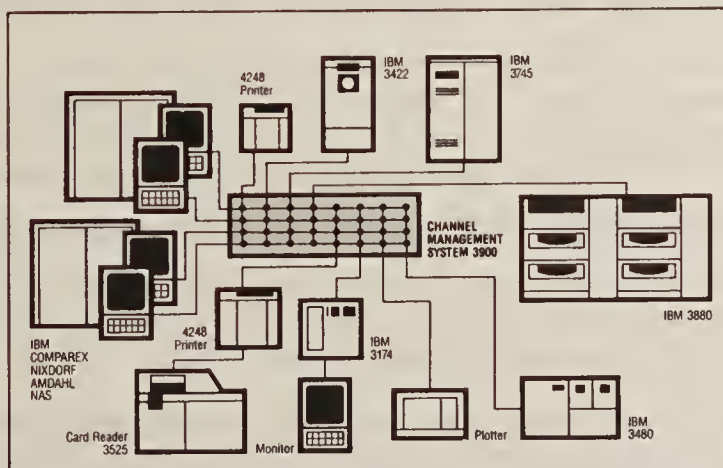
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PC-based control system	YES (standard)	YES (optional)	NO

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Barney

CONTINUED FROM PAGE 51

ing, vendors should nip this ceaseless stream of performance announcements in the bud. They should instead start working on products that exploit additional power and make their more expensive wares worth buying.

So far, the only group that has truly used the full potential of faster PCs is IS itself. These are the people who dump Amdahl and IBM big iron and put the same applications on PCs. These are the people who tie users more effectively to networks and who save mainframe cycles by giving programmers PCs equipped with a new breed of truly robust lan-

guage tools.

So where are the productivity software vendors? What have they done to harness the power of a \$10,000 33-MHz Intel 80386 with 32-bit addressing, burst mode, etc., etc., etc.? Not too much.

Look around your company. Look at an old IBM PC XT that has been lying around for years and look at its hard disk directory. You're likely to find Dbase III, Lotus 1-2-3 Release 2.01 and maybe Ultimate or Wordstar.

Then search the directory of that snazzy 80386 used by one of the top accountants. Hmmm. It comes up pretty fast. Look. There's Lotus 1-2-3 Release 2.01. And a little further down, Dbase III. Just below that is PFS: Write. Now there's some exciting stuff!

Whatever happened to the idea of breakthrough products, instead of me-too products? How about a spreadsheet that doesn't intimidate the novice or leave the professional number-cruncher lost in a sea of figures?

With double-digit MIPS and large amounts of memory, it should be easy to run a spreadsheet with an expert system front end that helps lay out rows, plug in formulas and generate balance sheets, income statements and departmental reports.

With that kind of power, it should be easy for someone to run a word processor that suggests a new paragraph, or sentence, when someone runs on and on and on . . .

Instead, all we get are menus, menus

WHATEVER happened to the idea of breakthrough products, instead of me-too products? How about a spreadsheet that doesn't intimidate the novice, or leave the professional number-cruncher lost in a sea of figures?

and more menus. How about some intelligence?

Since the excitement level of new chip announcements has fallen, vendors have started to get desperate. And when they get desperate, they become even more manipulative.

For example, profit-hungry suppliers now have the gall to tell us that a 386 machine is the entry-level machine. If you don't have at least a 386, you ain't worth a darn.

This sounds a wee bit hollow coming from an industry that has failed to create software products good enough to replace old, intimidating and awkward corporate standards.

It is time to put creativity back into software design. It is also time to turn off the hype machines for a while and generate products worthy of a 33-MHz chip. And maybe, just maybe, this will help the vendors regain some of their long-lost credibility.

Barney is editor in chief of *Amiga World*.



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Apple launches promo season

CUPERTINO, Calif. — April showers bring May flowers, but the year-end holiday season typically brings price cuts and promotions.

Apple Computer, Inc. has unwrapped a somewhat tricky holiday promotion built around the following systems: the Apple IIGS, Macintosh Plus, SE, SE/30 and the IICX.

Customers can opt for the free trial run or grab between \$150 and \$300 in cash rebates on purchases of qualifying peripherals when buying any of the systems. Purchasers of multiple systems will receive a rebate on each qualifying purchase.

Customers who meet Apple financing criteria can undertake one free trial on qualifying systems until Dec. 31. Those systems must be returned between Jan. 1 and 15. Lop \$100 off the sticker price if the system is bought before Dec. 31 but kill the rebate on peripherals. Got all that?

Also, more than 70 software developers are participating in the promotion through direct money-back offers on more than 100 packages when purchased by participants in the Free Trial Run program. Qualifying software falls into five categories: analyze and plan; design and illustrate; write; present and publish; connect; and learn and play.

If customers decide to buy the trial system, the software must be kept. If the system is returned, the software can be purchased or returned to the developers.

**A few words
about the one
piece of software
that could kill
your company.**

NEW PRODUCTS

Systems

Easydata Computer Products has introduced three models to its line of systems.

The products are 33- and 25-MHz Intel Corp. 80386-based systems and a 16-MHz 286 sys-

tem. The 16-MHz system costs \$1,124, and the 25-MHz and 33-MHz systems are \$4,600 and \$5,500, respectively.

Easydata
201 Ravendale Drive
Mountain View, Calif.
94043
415-968-3400

Prime Computer, Inc. has announced three workstations based on Sun Microsystems, Inc. Scalable Processor Architecture.

The company lists the models as the WS42C, a 12.5-million instruction per second (MIPS) desktop station, the WS40C, a 10-MIPS deskside station, and the WS45S, a 16-MIPS server. Pricing is from \$22,660 for the

WS40C, \$89,900 for the WS42C and \$62,800 for the WS45S.

Prime
Prime Pkwy.
Natick, Mass. 01760
508-655-8000

Sirex, Inc. has introduced an Intel Corp. 80386-based 20-MHz workstation.

According to the vendor, the Workmaster has a six-layer

80386 motherboard that includes zero- and one-wait state, an Intel Corp. double sigma 32-bit 80386-20 CPU, 80387 and 80287 math coprocessor sockets and 1M byte of random-access memory, expandable to 8M bytes. The system is said to be compatible with MS-DOS, OS/2, The Santa Cruz Operation's Xenix, AT&T Unix V/386 and Pick operating environments.

The Workmaster 386-20 costs \$1,295.

Sirex
132-14 11th Ave.
College Point, N.Y. 11356
800-722-0404

AST Research, Inc. has announced a 16-MHz Intel Corp. 80386SX-based computer system designed to allow upgrading to an Intel I486 processor.

The system uses AST's Completely Universal Processor, I/O Design (CUPID-32) architecture, which allows component upgrades without making the computer obsolete.

The price for the Model 3V with a 3½-in. floppy or the Model 5V with a 5¼-in. floppy is \$2,695. The Model 45V includes a 40M-byte AT-embedded hard drive and costs \$3595.

AST
2121 Alton Avenue
Irvine, Calif. 92714
714-863-1333

Qume Corp. has announced price cuts on selected models of its QVT terminal product line.

Prices on models QVT 119 Plus and QVT 203 Plus have been reduced by about 11% and 16%, respectively. The lower price for both models is \$499.

Qume
500 Yosemite Drive
Milpitas, Calif. 95035
408-942-4000

Agilis Corp. has announced a family of handheld, modular workstations for mobile network computing.

The workstations support MS-DOS, UNIX and MS-OS/2 operating software.

Pricing ranges from \$2,000 to \$20,000.

Agilis
1101 San Antonio Road
Mountain View, Calif.
94043-1008
415-962-9400

Epson America, Inc. has introduced an IBM Personal Computer AT-compatible desktop PC.

The Equity IIE is an Intel Corp. 80286-based system that operates at 8 or 12 MHz and comes with 1M byte of random-access memory.

Pricing begins at \$1,799 for a single 5¼-in. floppy drive configuration. A single floppy/40M-byte hard drive system costs \$2,699 retail.

Epson
23530 Hawthorne Blvd.
Torrance, Calif. 90505
213-539-9140



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outright lying* **Enough.**

Flatulent rhetoric and misleading tech-talk are not exactly a good basis for decision-making. Especially not when the subject is relational databases.

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Ingres, you'll finally see an alternative to gibberish, vapor and blah. Namely, real information about a more intelligent way to run your business. The Ingres Relational Database System. Stay tuned.

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Software applications packages

Adobe Systems, Inc. has announced an automated graphics production software package with windowing capabilities for IBM Personal Computers and compatibles.

Adobe Streamline-Windows Version automatically traces bit-mapped images and converts them into Adobe Postscript-language artwork. The artwork can then be used as is, modified or exported for use in page layout or word processing programs.

The product requires an Intel Corp. 80286- or 80386-based machine with a minimum of 640K bytes of conventional memory. It carries a recommended retail price of \$395.

Adobe Systems
P.O. Box 7900
1585 Charleston Road
Mountain View, Calif. 94039
415-961-4400

Automated Reasoning Technologies, Inc. has released a personal finances management program for users of Lotus Development Corp.'s 1-2-3.

Personal Finances with 1-2-3 Release 3.0 reportedly manages personal checking accounts and analyzes budgets, real estate investments, stocks, bonds, options and savings using Release 3.0's multiple worksheets and three-dimensional graphs.

The program is said to provide sample data so that users can see how the program is going to work before entering their own data.

Available for Releases 1A, 2.01 and 3.0 of 1-2-3, the software sells for \$99.

Automated Reasoning Technologies
Suite 618
975 Oak St.
Eugene, Ore. 97401
503-345-0030

Idea Works, Inc. has introduced a statistical software package that is said to help researchers select the right statistic for analysis problems.

Version 1.1 of Statistical Navigator reportedly uses artificial intelligence strategies to scrutinize and compare options based on users' needs and help them correctly analyze data. According to the company, the program provides detailed justification for recommendations, prints written reports, warns the user about relevant controversies and performs sensitivity analyses.

For use on the IBM Personal Computer or compatibles, the price is \$99.95 plus \$5 for shipping and handling charges.

Idea Works
100 West Briarwood
Columbia, Mo. 65203
314-445-4554

Applied Computer Solutions, Inc. has announced an edition of its three-dimensional VSA tolerance analysis software for users of IBM's Personal Computer, PC AT, Personal System/2 and compatibles.

The VSA/PC package includes the features of the full VSA program except for certain advanced statistical routines, advanced modeling libraries and the ability to handle very large models. According to the company, the program contains a user interface that allows the entire model creation, analysis and report-definition process to be performed graphically using a mouse and pop-up menus.

The price of the VSA/PC edition is \$750, compared with the full VSA price of \$5,000.

Applied Computer Solutions
300 Maple Park Blvd. • 301
St. Clair Shores, Mich. 48080
313-774-2640

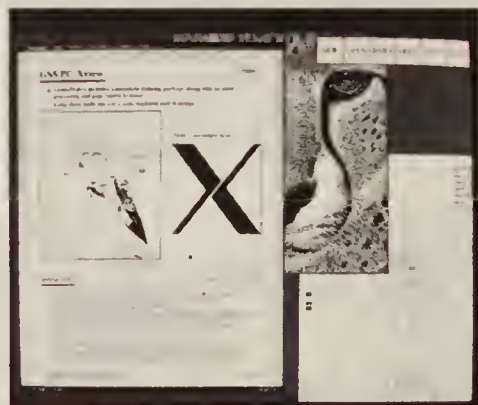
Dataid, Inc. has introduced a professional reference handler for the IBM Personal Computer, PC AT and compatibles.

Get-A-Ref is a tool for users who must access and update personal libraries of references and notes.

Since the software is random-access memory-resident, the user can access information while working in a word processor, Dataid said. The reference files are in ASCII format and may contain references with up to 16,000 characters of text each.

The price is \$250, with discounts available.

Dataid
P.O. Box 8865
Madison, Wis. 53708-8865
608-258-7767



Graphic's PC-Xview/16 displays multiple applications

Graphic Software Systems, Inc. (GSS) has announced an Intel Corp. 80286 protected-mode version of its DOS-based PC-Xview X Window System server.

PC-Xview/16 displays multiple host-based applications while using local PC memory to run the applications' graphics and window functions. By supporting the 286's protected memory, PC-Xview/16 can support 16M bytes of memory.

The package costs \$295.
GSS
P.O. Box 4900
9590 SW Gemini Drive
Beaverton, Ore. 97005
503-641-2200

A graphics package for creating Gantt and milestone planning charts has been announced by Softpro.

Milestones, Etc. reportedly runs on IBM and compatible machines under the Microsoft Corp. Windows operating environment. The graphics tool is said to include 28 symbol types in five sizes, 15 connector types used to connect symbols on the chart and a current date-sensitive option to provide for ease in maintenance. According to Softpro, other features include three levels of date headings, multiple page chart capabilities and flexible chart layout.

The price is \$89.

Softpro
P.O. Box 1167
Manchaca, Texas 78652
800-666-3886

The Center for Project Management has introduced a software package designed to automate project scheduling in a personal computer environment.

The company says Project-base is a life cycle-based planning and estimating system designed to help individuals develop comprehensive project plans and estimates. The plan can then be exported to scheduling and tracking software.

The licensing fee for the system is \$2,950.

Center for Project Management
Suite 290
18 Crow Canyon Court
San Ramon, Calif. 94583
415-837-0397

Software designed to assist corporate real estate managers who are responsible for multiple office or retail locations has been announced by Classic Software Development, Inc.

According to the company, the Lease Manager consists of six modules and provides several levels of lease cataloging and retrieval functions. Applications include accounts receivable and billings, check request and report writer facilities. Yearly updates of the program are available from the vendor.

A single-user version sells for \$3,495.

Classic Software
Suite 205
3200 Highlands Pkwy.
Smyrna, Ga. 30082
404-438-2088

Brightbill-Roberts & Co. has upgraded its desktop screen show software for IBM Personal Computers, Personal System/2s and compatible machines.

Show Partner/FX 3.5 reportedly includes enhanced interactive and animation capabilities as well as additional clip art material.

The product also incorporates the .GX2 image file format, which offers compatibility with

Lotus Development Corp.'s Freelance Plus 3.0 presentation graphics program.

Version 3.5 is priced at \$395, and registered users can upgrade for \$89.

Brightbill-Roberts
Suite 421
120 E. Washington St.
Syracuse, N.Y. 13202
315-474-3400



Easysoft's DOS partner is aimed at novices

Software utilities

An integrated application, file- and drive-management program that automates and replaces DOS commands has been introduced by Easysoft, Inc.

Aimed at the novice or non-power user, DOS Partner does not require users to have previous knowledge of DOS or DOS syntax, the vendor said. The program runs applications and names, formats and copies floppy disks automatically. It also provides statistics on entire disk drives and can be customized to meet specific user needs.

DOS Partner costs \$99.

Easysoft
Suite B100
1215 Hightower Trail
Atlanta, Ga. 30350
404-992-4140

Trio Systems has introduced a C language library for Microsoft Corp. Windows, OS/2 and MS-DOS database applications.

C-Index/PC reportedly will support single and multiuser applications and can be adapted for use with any PC compiler and operating system running on an Intel Corp. microprocessor.

The package costs \$195.

Trio Systems
Suite 531
953 E. Colorado Blvd.
Pasadena, Calif. 91106
818-798-5567

QMS, Inc. has announced color printing capabilities on its Ultrascript personal computer interpreter for Adobe Systems, Inc. Postscript.

Ultrascript PC will create Postscript-compatible files on Intel Corp. 80286- or 80386-based IBM Personal Computer compatibles.

Ultrascript PC is available with 25 typefaces for a list price of \$195. Ultrascript PC Plus, with 47 typefaces, costs \$445.

QMS
One Magnum Pass
Mobile, Ala. 36618
205-633-4300

Macintosh products

Bear Rock Software Co. has introduced a set of bar code fonts for the Apple Computer, Inc. Macintosh computer.

Called Printbar, the product includes Code 39, Interleaved 2 of 5, UPC and other bar code fonts that enable the Macintosh to print bar codes on an Apple Imagewriter, Apple Laserwriter and several Linotronic high-resolution printers.

Printbar costs \$395, which includes a user's manual and free telephone support.

Bear Rock Software
6069 Enterprise Drive
Diamond Springs, Calif. 95619
916-622-4640

A software product that converts IBM and other graphics file formats into Apple Computer, Inc. Macintosh computer PICT files has been announced by FGM, Inc.

Picture This can be used as either a desk accessory or a separate application, according to FGM. Converted files can be used as-is for display purposes, or they can be edited like any other PICT file.

The package is priced at \$99.

FGM
Suite 108
131 Elden St.
Herndon, Va. 22070
703-478-9881

Tektronics, Inc. has introduced a color fidelity system that optimizes color matching to printers.

Tekcolor, for use with Apple Computer, Inc. Macintosh systems, was developed to aid users in picking screen colors for duplicate reproduction on their output devices, the company said. The product includes a color selection and editing interface and carries a suggested retail price of \$50.

Tektronics
P.O. Box 1000
M-S 63-630
Wilsonville, Ore. 97070
800-835-6100

A product that will reportedly allow Apple Computer, Inc. Macintosh Portable users to run MS-DOS software has been announced by Insignia Solutions, Inc.

SoftPC will enable non-Intel Corp.-based PCs to run MS-DOS-based software by emulating an IBM Personal Computer XT. SoftPC will also allow users to paste text from PC programs to Macintosh applications and store both DOS and Macintosh files on a hard disk.

The suggested retail price of SoftPC is \$399.

Insignia
254 San Geronimo Way
Sunnyvale, Calif. 94086
408-522-7600

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AT&T
Network Systems

Peripherals

Summagraphics Corp. has unveiled a 12- by 12-in. tablet targeted toward computer-aided design and graphics professionals.

The Summasketch II 12x12 is available in two configurations. A four-button cursor, two-button stylus version is priced at

\$599; a 16-button cursor configuration is available for \$699. According to the vendor, the product is compatible with most computer-aided design software packages and includes a Microsoft Corp. Windows software driver.

Summagraphics
60 Silvermine Road
Seymour, Conn. 06483
203-881-5400

Polaroid Corp. has announced the availability of Lotus Development Corp. software drivers for users who use the Polaroid Paletteplus Computer Image Recorder.

According to the company, the drivers work with Lotus Freelance Plus Versions 2.0 and 3.0, and Graphwriter II Version 1.0.

The Paletteplus recorder de-

livers full-color instant prints, slides and overheads from IBM Personal Computers and compatibles equipped with Enhanced Graphics Adapter boards.

The suggested list price of the Paletteplus Computer Image Recorder is \$2,999.

Polaroid
575 Technology Square
Cambridge, Mass. 02139
617-577-2000

A 15-in. diagonal, stand-alone plasma display monitor is now available from Fujitsu Component of America, Inc.

Designated the FPF12000S, the unit is aimed at desktop publishing, computer-aided design, computer-aided manufacturing and other graphics-intensive markets. The monitor has a reported 1024 by 768 dot/in. resolution, weighs approximately four pounds, and is priced at \$5,000 in single-unit quantities.

Fujitsu Component
3330 Scott Blvd.
Santa Clara, Calif. 95054
408-562-1000

Board-level devices

Raritan Computer, Inc. has announced several memory boards developed for the IBM Personal Computer AT and 16-bit compatibles as well as the IBM Personal System/2.

The RCAT84 and the RCAT88 provide 4M and 8M bytes of random-access memory, respectively, and operate in systems at speeds up to 33 MHz, the vendor said. The 2M-byte RC5020 and the 4M-byte RC5040 also use high-speed 1M-byte chips and were designed for the IBM Personal System/4 Models 50, 50Z and 60.

The boards are priced from \$500 to \$1,600. Discounts are available with single orders of 10 or more.

Raritan Computer
Suite 1
10 Ilene Court
Belle Mead, N.J. 08502
201-874-4072

Trans-M Corp. has announced the release of its HPB RS485 SDLC communication board.

The HPB RS485 SDLC is a general-purpose communications-, data-acquisition- and control system that runs on IBM Personal Computer XT's and Intel Corp. 80286- and 80386-based machines. It reportedly provides synchronous communications at 250K bit/sec. over a distance of about 4,000 ft.

The price is \$345 per unit.

Trans-M
28 Blacksmith Drive
Medfield, Mass. 02025
508-359-5144

Monolithic Systems Corp. has introduced its noncached 16/25-MHz Microframe 386M motherboard.

Designed to give users an alternative to Intel Corp. 80386-based cached motherboards, the product has eight expansion slots on a baby-AT form factor, the vendor said. The board addresses up to 16M bytes of 32-bit, zero wait-state memory and is priced from \$1,133 to \$1,427, depending on model and options.

Monolithic Systems
7050 S. Tucson Way
Englewood, Colo. 80112
303-790-7400

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5300 W. Century Blvd.,
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DATA STREAM

Howard Cravis

Sizing up a network

Emerging technology and changing economies mandate that communications networks be re-evaluated — and re-optimized — every two or three years. How does one go about sizing a new or evolving network?

There are many excellent tools embodied in PC or mainframe programs to help the data network designer size a network. By "sizing" we mean estimating the speed and number of communications circuits needed to ensure good performance; sometimes we must also decide on connectivity issues, as in the case of a multi-point circuit.

Good performance means conformance with a criterion, such as "in 90% of transactions, response time shall be no more than two seconds." The criteria should consider the cost vs. performance trade-off.

Continued on page 72

Inside

- New net fuels pace at Churchill Truck. Page 66.
- DEC's LAN Bridge update makes way for FDDI. Page 71.
- Bell Atlantic tempts users with ISDN tidbit. Page 71.

HP/Apollo lights product fire

Apollo's Series 10000 powered up; HP Advance users gain new access

BY PATRICIA KEEFE
CW STAFF

The combined entities of Hewlett-Packard Co. and subsidiary Apollo Computer recently unleashed a product blitz designed to boost the power of Apollo's Series 10000 and expand network access for HP's Advance net users.

The introductions included the following products and plans:

- Available in January, HP's Team Computing Program combines Apollo's Network Computing System, X Window System and the Motif interface, which was developed by HP and Digital Equipment Corp. for the Open

Software Foundation.

- Systems enhancements for the Apollo Series 10000, including a reduced instruction set computing (RISC) chip said to double the system's power.

- Network-controller boards based on the emerging Fiber Distributed Data Interface (FDDI) standard and related Station Management software slated for delivery in April.

- The HP 700/X family of X Window System network-based graphics terminals.

Team up for power

The concept behind Team Computing is to allow users to more fully utilize the processing power

of every computer on multivendor networks via cooperative processing. The key is Task Broker, software said to use an intelligent bidding process to distribute entire tasks to the computer best suited for each job. It runs on any Unix computer and uses Transmission Control Protocol/Internet Protocol. HP is developing a version to run on DEC and Sun Microsystems, Inc. platforms.

Also included are NCS for HP Unix workstations, NCS-based system administration applications and a preconfigured X Window environment using Motif.

Over the next year, every major component of the minisuper-

computer-class, multiprocessing Series 10000 will receive a substantial upgrade, HP said. These will include a new RISC chip; a parallelizing and vectorizing compiler to increase system performance by two to four times; a fourfold increase in main memory capacity; a sixfold increase in disk capacity; and a tenfold boost in local-area network bandwidth.

Priced at nearly half the cost of an HP diskless workstation, the 700/X can run in a multivendor networked environment. It is said to provide graphics and LAN performance equivalent to an entry-level workstation configured as an X Server.

Apollo will produce the FDDI boards, which will initially support the Series 10000. They will be used to connect high-performance workstations to FDDI's 100M bit/sec. bandwidth.

Booz taps tight labor pool with LAN database

ON SITE

BY MITCH BETTS
CW STAFF

BETHESDA, Md. — Personnel departments in corporate America are under increasing pressure not only to hire technical specialists in a tight labor market but also to account for how they spend their money.

That is certainly the case at Booz-Allen & Hamilton, Inc., a high-tech professional services firm that is competing with systems integrators and consulting

firms for technical talent, according to Cynthia J. Millios, manager of personnel administration for the firm's information technology center.

Millios said she is relying on an employment database management system running on a local-area network of personal computers to help maintain a competitive edge as a recruiter and generate management reports.

For example, the system allows Millios to track the progress of resumes through the hiring process, identify which



Booz-Allen's Millios tracks resumes through hiring process on LAN-based DBMS

newspaper advertisements generate the greatest number of qualified applicants, monitor the productivity of individual recruiters and compile statistics on minority hiring and the cost-per-

hire. "It puts a lot of financial information at our fingertips, as opposed to going through the [company's less-accessible] accounting mainframe system,"

Continued on page 70

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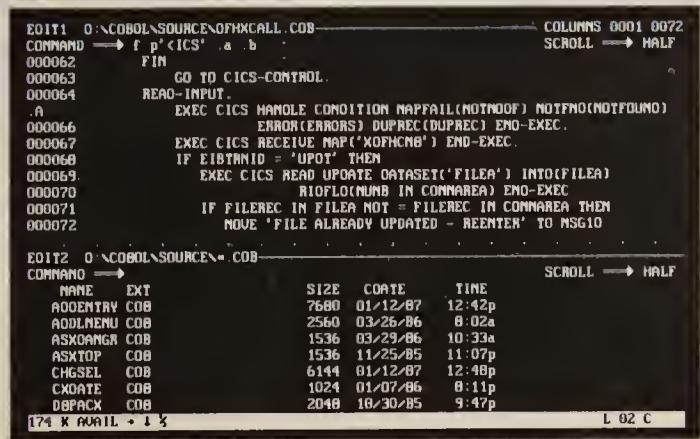
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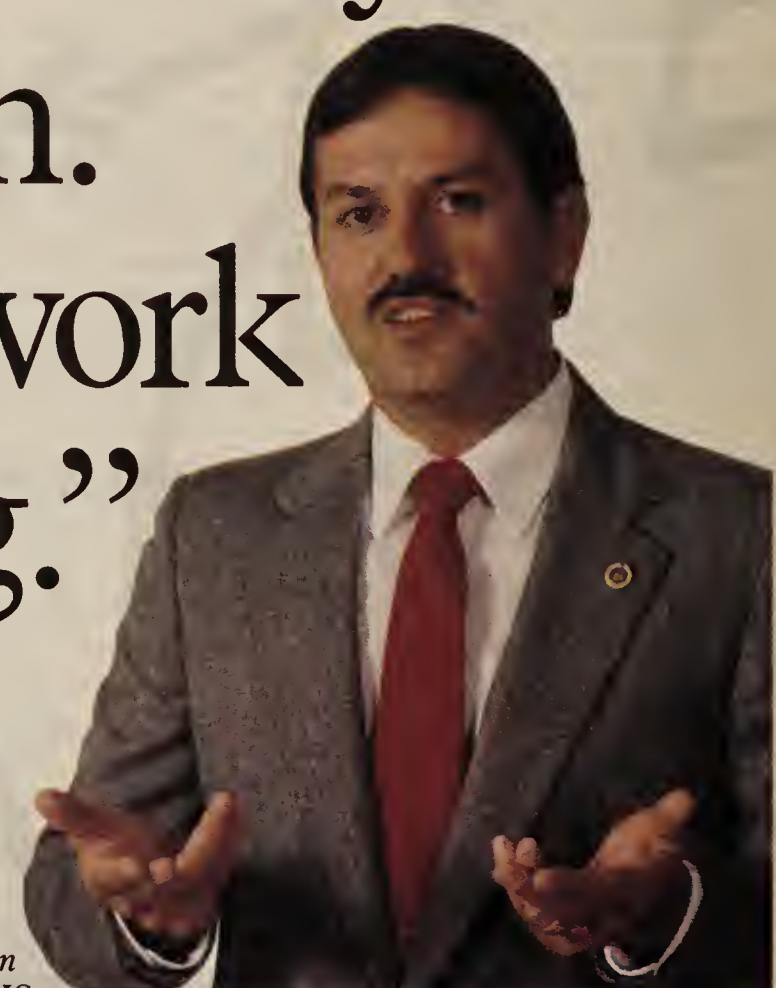
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A photograph of Chuck Daly, a man with short brown hair, wearing a dark suit, white shirt, and dark tie. He is holding a basketball with both hands in front of him.

*Chuck Daly
Head Coach
NBA Champions
Detroit Pistons*

“In This League,
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An Outstanding Individual
Performance, But
Also Elevates The Play
Of The Team.
Because Teamwork
Is Everything.”

A photograph of Bill Thompson, a man with dark hair and a mustache, wearing a grey suit, white shirt, and red tie. He is gesturing with both hands open.

*Bill Thompson
Director of MIS
The Sherwin-Williams Company
Paint Stores Group*

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Creating value

AT&T eases doubts with planned enhancements

BY JOANIE M. WEXLER
CW STAFF

DALLAS — AT&T recently sought to assuage any lingering fears that its Information Systems Network (ISN) might fade into oblivion and leave users in the lurch.

At the Network Users Group of AT&T (NUGATT) meeting, held here last month, the company announced plans to enhance ISN in 1990. ISN is designed to serve as an asynchronous wide-area network (WAN) in a campus or building environment. The plans include an upgrade to the network's main Intel Corp. processor and enhanced system management capabilities for improved administration, maintenance and reports.

In making the announcement, Roy Eberle, AT&T's director of systems marketing, said, "You've told us that ISN is very important to you, that you want additional ISN management capabilities and that you want to protect your investments."

His comments referred to user voices raised at past NUGATT meetings. ISN users became edgy when the company introduced a version of its Datakit II Virtual Circuit Switch, originally designed for central offices, to the commercial market last March. Datakit II is a high-speed backbone switch targeted to synchronous large-scale WANs.

Users had expressed concern at May's NUGATT meeting that

in order to get Datakit functionality, they would have to upgrade to the bigger, more expensive switch. Users were not specifically opposed to AT&T's folding ISN into Datakit, as long as the company retained a low-cost, entry-level version consistent with what ISN had to offer. Otherwise, they asserted, smaller users would have a big bridge to gap in moving up to the Datakit II offering.

Overall, last month's NUGATT attendees expressed satisfaction with their ISN, Datakit II and Starlan networks, as well as with AT&T responsiveness to their concerns.

Suggestions from users included a rethinking of AT&T's prioritization criteria for responding to network outages. Users said the current priority system, which gives attention first to networks that are completely "down," is less than ideal. One user pointed out, for example, that networks not functioning as intended should also be given a high priority.

Joel Appelbaum, AT&T vice-president of technical service and support, said part of the problem is that "different people now support the presale and postsale network. We're going to reorganize that."

Another user requested that AT&T bring the crash kit and spare parts database up to date for ISN. Appelbaum said, "AT&T hasn't done all that it can to meet your needs; the tools haven't been adequate."

Cylix keeps Churchill truckin'

ON SITE

BY JOANIE M. WEXLER
CW STAFF

CHILLICOTHE, Mo. — With today's demands for quick turnaround, a company's success can hinge on a few seconds of computer response time. So when response on Churchill Truck Lines' nationwide terrestrial data network became sluggish because of corporate growth, the company knew it had to act fast.

Churchill decided to replace its multipoint AT&T network with one that combines satellite and terrestrial facilities. Under a \$2 million agreement signed in September, the company contracted with Cylix Communications Corp. for 56K bit/sec. C-band satellite circuits, earth stations, 9.6K bit/sec. modems and network management services.

The network, which Churchill said is faster and more reliable, became operational two weeks ago. Churchill anticipates bottom-line productivity and cost benefits through greater network availability, according to Harold Atkins, corporate secretary. It also speeds up the process of obtaining rate quotes for customers.

The network carries information about equipment, shipping, rating and billing among 81 trucking locations in 25 states. Users transmit and receive data to and from their nearest private earth station via a local telephone line, and the network's 22 earth stations communicate with one another over the satellite circuits.

In an era in which users tend to maintain control of their own

networks, Churchill has turned the reins completely over to Cylix. The vendor's diagnostic equipment in its network control center allows Cylix to detect an outage on a link between a Churchill host and Cylix concentrator within one minute, according to the vendor.

Cylix uses a proprietary network management system with a gateway into IBM's Netview to manage its customers' networks, according to Tom Man-



gan, Cylix vice-president of sales and marketing.

Mangan claimed Cylix is particularly suited for managing networks of companies in the transportation industry, which tend to be in business 24 hours a day, seven days a week. Cylix keeps its maintenance window to about one hour at 2 a.m. on Sundays so as to have the least possible impact on a customer's business.

An IBM 4381 mainframe in Churchill's headquarters in Chillicothe supports eight local phone line links to an earth station in Kansas City, Mo. This configuration boosts network reliability, according to Atkins.

"If one of those phone lines should go down, Cylix, with a quick software change, can switch the sites that use that circuit to one of the other seven lines. This prevents us from suffering any downtime," he explained.

Previously, he noted, the network was configured with five long-distance lines, each serving

16 or 17 locations, which meant that 55 to 60 IBM printers and terminals were supported by each line.

If a circuit went down, Atkins said, the company had to wait until it was repaired by AT&T, and in the meantime, all the locations using the line would not be able to communicate.

According to Atkins, Churchill has been growing at an annual rate of 15% to 25% for the last few years. He said that on the old network, which was configured with 4.8K bit/sec. modems, response times were getting worse because of heavier traffic loads and devices being added to the network.

"It was taking us longer to do our work, resulting in overtime," Atkins said. "When our billing personnel have to wait 15 seconds to three minutes before they can start generating a new invoice, that's costly. We should be getting three- or four-second response times."

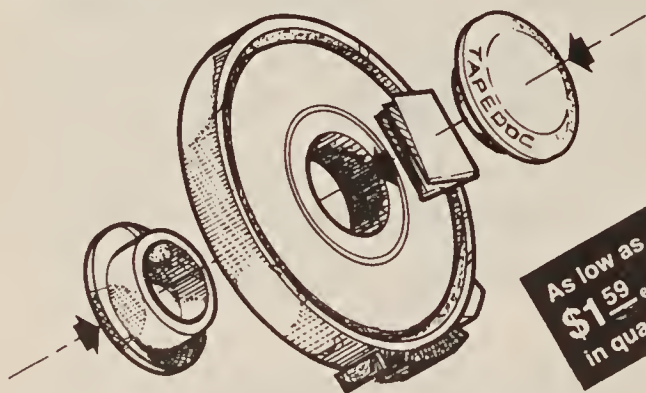
Another cost advantage of the network, Atkins said, is the fact that satellite circuits are not tariff-controlled or priced on a distance basis.

The reason Churchill selected Cylix as its vendor, Atkins said, is that most of the others his company evaluated were strictly very small-aperture terminal suppliers.

"We didn't feel we were large enough to justify the expense of putting a satellite dish at each of our locations and not using any land lines. That configuration is a little more costly than what Cylix was able to design for us," he noted.

Atkins said he expects the new network to support "unlimited growth," because it allows Churchill to easily add extra lines from Chillicothe to Kansas City.

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Federal ISDN service sooner than expected

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — Federal agencies may get their first taste of Integrated Services Digital Network (ISDN) services a little sooner than expected, according to Michael L. Corrigan, chief of the new Federal Telecommunications System 2000 project.

"We got a bit of a surprise," Corrigan said, when private branch exchange vendors AT&T and Northern Telecom, Inc. agreed to provide ISDN Primary Rate Interface services as soon as October 1990. Originally, AT&T and Northern Telecom had planned for a January 1991 availability.

However, full-scale ISDN services will not be available to

FTS-2000 users until 1992.

At last month's Federal Computer Conference, Corrigan said that the Primary Rate Interface service is needed to provide automatic number identification so that agency managers can receive detailed billing of FTS-2000 services.

Same as Centrex service

Local exchange carriers that provide Centrex service to the government will also provide automatic number identification, in much the same way they provide that information to long-distance carriers, according to Corrigan.

He is deputy commissioner of the U.S. General Services Administration for telecommunications services.

By fiscal year 1991, which

starts next Oct. 1, "all services will be billed by usage, and that's the reason that automatic number identification is a crucial item," he said.

Organizations are currently billed based on previous usage patterns.

Under the 10-year FTS-2000 contract, the government does not own any equipment or lease any lines but instead pays the network vendors, AT&T and U.S. Sprint Communications Co., on a per-minute usage basis.

FTS-2000 is the government's intercity digital network, providing switched voice and data services, packet switching and dedicated data transmission services.

The private voice/data network was inaugurated last month [CW, Oct. 16].



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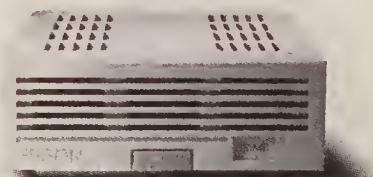
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Booz database

CONTINUED FROM PAGE 63

according to Millios.

In essence, the system is a classic case of departmental computing on a LAN. It uses employment management software called Restrac, made by Microtrac Systems, Inc. in Newton Highlands, Mass., running on a companywide 3Com Corp. Ethernet LAN and IBM-compatible PCs. The Restrac system is used by 28 recruiters and support personnel at the information technology center.

The core of the system is a software module for tracking job applicants throughout the hiring cycle — an important function for a department that re-

ceives 1,500 resumes per month, Millios said. If nothing else, it helps to prevent lost resumes and wasted effort on duplicate resumes.

"Any human resources department is just full of paper, and a resume could be on any one of 16 people's desks . . . so it helps to automate the process," she said.

Did I get the job?

In addition, automated resume-tracking is helpful when eager applicants inevitably call to find out their status. Millios said the center's receptionist uses Restrac to handle routine inquiries and tell applicants exactly where their resume stands.

Furthermore, Restrac is used to produce standard correspondence such as acknowledgment letters, post-interview

letters and rejection letters. Doing this within the office, rather than sending the task to a central word processing department, saves a lot of time, Millios added.

There are also times when the system saves money. If the Booz-Allen recruiters discover that an applicant suggested by an employment agency already is listed in their Restrac system, they can hire the person directly and avoid paying a \$15,000 agency fee, she explained.

At the management level, Millios uses Restrac to produce a monthly recruiting and financial report, allowing the department to compare its costs with its budget. She said the company's mainframe accounting system does not provide the detail or timeliness necessary for the human resources department. "This is not top

priority for them. They're worried about billing clients and revenues," she said.

Millios praised the Restrac product for being menu-driven and able to handle customized fields. However, she said the report-writing language "could be more user-friendly."

Millios expects to hang onto Restrac as a stand-alone system, even though it cannot be integrated with a full-scale human resource management system, which Booz-Allen is likely to acquire in the next few years. She said a human resource system for current employees does not need to be cluttered with data on job applicants.

"You don't want to keep 1,500 resumes, probably 90% of which are garbage, with everything else" in the personnel database, Millios said.

BITBLAST

COS Mark to include 802.3

The Corporation for Open Systems (COS) has officially extended its COS Mark Program to include the IEEE 802.3 Ethernet LAN protocols. The program, which tests and licenses products for conformance to Open Systems Interconnect (OSI) standards, formerly addressed only IEEE 802.4 Token-Bus specifications.

In addition, COS and the Europe-based Standards Promotion and Applications Group have announced that they will co-develop, in cooperation with the Open Systems Interconnect (OSI) Network Management Forum, conformance testing tools for OSI network management protocols such as Common Management Information Protocol. The systems are scheduled to be available by the fourth quarter of next year.

The health-care industry will be a major growth area in the electronic data interchange market over the next five years, according to New York research firm Find/SVP. Health-care organizations' purchase of EDI hardware and software will climb from \$79 million in 1988 to \$116 million by 1992, the firm said.

Siemens AG and Digital Equipment Corp. announced the first fruits of their alliance to promote applications linking Siemens Hicom private branch exchange systems with DEC VAXs. The two vendors are introducing products for computer-integrated telephony applications, including servers, applications interfaces and an applications connectivity link to Siemens' Hicom 300 system.

Joiner Associates, Inc. recently announced a program to provide Jmail, a family of gateways that will connect Digital Equipment Corp. electronic mail systems to a variety of local-area network mail systems and academic and research networks, such as Bitnet and Internet. Specific product announcements and shipments are expected by year's end.

Stratus Computer, Inc. has launched a program to develop Integrated Services Digital Network (ISDN) products for end users and network services. Stratus will develop hardware and software products to integrate its XA 2000 Continuous Processing Systems with ISDN networks, the fault-tolerant computer vendor said.



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LAN Bridge revved up for Ethernet support

BY ELISABETH HORWITT
CW STAFF

ATLANTA — Digital Equipment Corp. announced a reportedly more powerful version of its LAN Bridge product line at the recent Localnet '89 show.

LAN Bridge 200 is said to support a filtering rate of 29,760 packet/sec. and a forwarding rate of 14,880 packet/sec. This enables the bridge to keep up with Ethernet speeds of 10M bit/sec., as it forwards packets between two local-area networks, according to director of LAN marketing Gail Daniels.

DEC's older LAN Bridge 100 supports

24,272 packet/sec. filtering rates and 13,404 packet/sec. forwarding rates, Daniels said.

LAN Bridge 200 is said to provide fiber-optic-based connections between two Ethernet LANs over distances of up to 10 km. The same fiber that connects LAN Bridge 200s can be used to support the Fiber Distributed Data Interface (FDDI) backbones that DEC has announced intentions to provide, Daniels noted.

DEC also announced LAN Bridge 150, which replaces the LAN Bridge 100 as a lower cost version of LAN Bridge 200 and has the same throughput as the 100.

Both the 150 and 200 are said to con-

nect two Ethernet LANs either locally or over a fiber-optic link.

DEC also intends to provide FDDI wiring concentrators that deliver the full FDDI 100M bit/sec. speeds to the desktop, Daniels added. No time frame was given, but DEC should deliver a full range of FDDI products, including adapters and wiring concentrators, within the next couple of years, Daniels said.

The company also announced Version 2.0 of its Remote Bridge Management Software. The package includes password protection against unauthorized reconfiguring of bridges and additional filtering capabilities.

Working in concert with a LAN Bridge 150 or 200, the software is said to restrict which users or protocols are allowed to send packets outside a given LAN, across the bridge to another LAN. The source and protocol filtering capabilities address potential bridge traffic bottlenecks and security issues. Protocol filtering also enables managers to figure out what type of workstation is causing a "broadcast storm" by a process of elimination, Daniels explained.

DEC INTENDS to provide FDDI wiring concentrators that deliver 100M bit/sec. speeds to the desktop.

Remote Bridge Management Software Version 2 is scheduled for availability this month and is priced at \$1,224. LAN Bridge 200, available immediately, is priced at \$8,500 for the local version, \$9,500 for the 3-km fiber-optic version and \$14,000 for the 10-km version.

The LAN Bridge 150 is available immediately, priced at \$6,500 for the local version and \$7,500 for the 3-km fiber-optic version. No 10-km version of the 150 is available.

Tool offers taste of ISDN

BY JOANIE M. WEXLER
CW STAFF

With hopes of enticing small users to turn to the public telephone network for occasional large-volume data transmission needs, Bell Atlantic Corp. recently announced software it says will offer a taste of broadband Integrated Services Digital Network (ISDN) capabilities.

The software, slated for availability in fourth-quarter 1990, should allow users to move files quickly through the public network and "get the effect of a local-area network wherever ISDN is available," according to John Seazholtz, Bell Atlantic's vice-president of new technology.

Proprietary data compression techniques increase throughput, reportedly allowing data to travel at full-duplex speeds to 6M bit/sec. (3M bit/sec. in each direction) over an ISDN Primary Rate Interface link. Such links support speeds of up to 1.5M bit/sec. and typically connect hosts and communications switches.

The product will load into a Teleos Communications, Inc. terminal adapter specifically designed to operate with the software. The adapter establishes the link between the computer and a Basic Rate or Primary Rate ISDN line.

The initial software version will run on IBM Personal Computer XTs and ATs, and future versions are planned for other popular computers.

Field tests of the basic ISDN connection software version running on IBM PC XTs and ATs are slated to begin during the second quarter of 1990. Beta-test users should be nailed down next month, according to Seazholtz. Pricing is not available at this time.

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Cravis

CONTINUED FROM PAGE 63

The precision of a design tool depends on the stage of the design as well as on the status of the network. In the pre-implementation stage, where the network is only a thought object, we can make broad-range estimates. These will often suffice to weed out alternatives on the basis of cost.

At the other end of the scale, to fine-tune the performance of an existing network, we need reliable message volume data and would apply well-refined tools such as simulation.

There are two basic network design modeling methods, the analytical model and the simulator. The simulators embody, insofar as the input data contain them, all relevant aspects of the network, such as protocol idiosyncrasies. However, there is some statistical variability to the results, since each simulation period is a time sample.

On the other hand, the analytic model often uses simplifying assumptions, and thus it may not account for everything that influences the network performance. However, it does lend itself to a quick scan of results over a wide range of conditions.

The time-shared computing services of The Aries Group in Rockville, Md., illustrate the analytical tool. The Queue program, for example, calculates the response time that can be expected on a polled, multipoint circuit.

The designer enters input data to Queue, including the number of devices on the circuit, transaction characteristics, circuit speed and protocol parameters, using menus and prompts. The program requires one significant noncommunications parameter, the average processing time per transaction.

If the indicated response times are too slow, the designer may increase the circuit speed or distribute the devices over more multipoint circuits. By iterating the analysis runs, we arrive at a satisfactory multipoint circuit configuration.

The simulation approach is illustrated by the Network II.5 program from Caci Products Co. in La Jolla, Calif. The program can simulate the operations of several different networks, including, as our example here, a local-area network that uses the Ethernet, Token-Ring, Token-Bus or Fiber Distributed Data Interface (FDDI) protocols. The necessary input data includes the number of connected devices, transaction rate per device, transaction and overhead lengths and parameters related to the protocol and hardware. The results are the response times, numbers of messages delivered and lost, device utilization and queuing statistics.

Network II.5 illustrates the differences between the two approaches.

Whereas a program such as Queue relies on formulas derived from modeling the network, Network II.5 and other simulators carry out an event-by-event simulation.

Finally, several computer services make available to the designer the costs of telecommunications facilities. The tariffs of telephone companies, interexchange carriers and other service providers change frequently. Thus, it is helpful to have an on-line service such as Q-Tel 1000, from CCM/McGraw-Hill in Ramsey, N.J. A designer enters descriptors for the type of facility whose cost is in question. For example, for a point-to-point dedicated circuit, the data would be the locations of the end points, type of service and choice of carrier.

The program refers to a database of carrier tariff data that the vendor maintains. It displays the nonrecurring and monthly circuit costs in various levels of detail, as the designer wishes.

Network design is both straightforward and complex. Network optimization requires the careful selection of analytical tools and up-to-date information. Properly selected, however, the mathematical analysis is straightforward. Good engineering knowledge, solid familiarity with available tools and access to current data are all essential to sizing — and optimizing — the data network.

Cravis is a senior member of the professional staff at Arthur D. Little, Inc. in Cambridge, Mass., and author of *Communications Network Analysis*.

NEW DEALS

DEC does \$15M deal with Boeing

Digital Equipment Corp. has sold a \$15 million networked office information system to **Boeing Computer Services** to support the National Aeronautics and Space Administration (NASA) Space Station Freedom program. DEC will provide up to 15 DEC VAX 6300s, All-In-1 mail and Decnet software to assist NASA's Technical and Management Information System in linking NASA sites.

Lufthansa German Airlines has developed an electronic data interchange (EDI) system with Paris-based **Group Generale De Service Informatique** and **Danet GmbH** in Darmstadt, West Germany. The latter are suppliers of Open Systems Interconnect products and services. Called Mosaic, it is said to be the first data network based on EDI technology and designed to serve the cargo-handling industry. Lufthansa plans to offer Mosaic as a value-added network to the international cargo-handling community.



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NEW PRODUCTS

Local-area networking hardware

Cubix Corp. has announced an intelligent Ethernet controller for IBM Personal Computer ATs and XT's.

According to Cubix, the 2410 Ethernet front-end controller is compatible with the latest implementations of the Open Systems Interconnect and Transmission Control Protocol/Internet Protocol. The controller is said to be designed specifically for multitasking network environments and is equipped with an Intel Corp. 80186 processor and 1M byte of

dual-ported memory.

The 2410 with 1M byte of random-access memory sells for \$975; the 512K-byte version is listed at \$745.

Cubix
2800 Lockheed Way
Carson City, Nev. 89706
702-883-7611

Cogent Data Technologies, Inc. has introduced E/Master, an Ethernet adapter card with IPX drivers that offers support for Novell, Inc.'s Netware environment.

The 16-bit adapter incorporates a proprietary Bus Master technology to produce data transmission speeds of more

than 1M bit/sec., the firm said. It reportedly supports both diskless workstations and larger networks.

The product's list price is \$695.

Cogent Data Technologies
P.O. Box 926
Friday Harbor, Wash. 98250
206-378-2929

Local-area networking software

NBI, Inc. has introduced Officeworks Version 2.2, which is designed to allow Apple Computer, Inc. Macintosh users to utilize Officeworks networking and information management functions.

According to the company, the latest release provides electronic mail and file

sharing with personal computers, document retrieval and conversion services, central backup of files, time management and 3270 communications and procedural processing. The product is targeted at workgroups with both PCs and Macintosh machines and is scheduled for delivery in March 1990.

A 32-user system with a network server and Officeworks information management software is priced from \$18,800.

NBI
P.O. Box 9001
Boulder, Colo. 80301
303-444-5710

A wide-area network design software program designed specifically for multiple users over local-area networks is available from Network Management, Inc.

Lan Mind reportedly allows users to access and share data about WAN costs, configurations, plans and operations. It can analyze mesh and T1 backbone networks. The program can also automatically perform least-cost concentrator-, multiplexer- and switch-location designs, the company said. Users can augment or design networks of up to 16,000 nodes without using complex partitions or sub-optimum designs.

A LAN server copy costs \$36,000.

Network Management
11242 Waples Mill Road
Fairfax, Va. 22030
703-385-4774

Network management

Palindrome Corp. is now supplying a retrofit kit to replace the archiving software supplied with other brands of 2.2G-byte tape systems with its own Network Archivist package.

According to the company, Network Archivist utilizes a Tower of Hanoi tape rotation to provide long-term protection without requiring a large number of tapes.

The announced price of the Network Archivist kit is \$1,295.

Palindrome
Suite 208
710 E. Ogden Ave.
Naperville, Ill. 60563
312-357-4600

Racal-Milgo has expanded its Sunrise family of network management systems with the addition of the CMS 400.

The product uses the IBM Personal System/2 as its hardware platform for network management and was developed to simplify database entry and network

Continued on page 76

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Continued from page 73

configuration, the company said. Features include an Auto-Learn function that supports automated database creation, and the system also provides the ability to control groups of diagnostic devices, the company said. Context-sensitive Help facilities are also included.

Pricing ranges from \$10,000 for an entry-level turnkey system to \$150,000 for a 512-channel, eight-operator system.

Racal-Milgo
1601 N. Harrison Pkwy.
Sunrise, Fla. 33323
305-475-1601

Customer-premises equipment

The Info Group, Inc. has announced two products specifically designed for users of Rolm's computerized branch exchanges (CBX), including the 8000, 9000 and 9751 series.

According to the vendor, Comcop Plus enables users to directly communicate with the Rolm system and automatically transfer all of the CBX database information into a personal computer-based Comcop Plus database. It is expandable from 100 to 5,000 lines, and a 450-line configuration costs \$6,950.

The ATMS/Rolm system reportedly provides the same features as the company's ATMS Network Management system and provides a link between the ATMS and Rolm CBS databases. It is available for PC local-area networks, Digital Equipment Corp. VAX machines and the IBM 9370 and mainframe computers. Pricing ranges from \$25,000 to \$200,000.

The Info Group
46 Park St.
Framingham, Mass. 01701
508-872-8383

Links

Retix and Interactive Systems Corp. have announced two software products designed to aid migration from Transmission Control Protocol/Internet Protocol to Open Systems Interconnect.

The OSI Application Interface to TCPL reportedly permits OSI upper-level protocol applications, such as FTAM, X.400 or Virtual Terminal to operate over TCP/IP stacks. Slated for delivery in first quarter of 1990, the interface will be priced from \$95.

The Retix X.400 Gateway for Unix offers communications between TCP and OSI mail networks, according to the company.

Single-quantity list pricing starts at \$225, and the product is scheduled to begin shipping in the second quarter of 1990.

Retix
2644 30th St.
Santa Monica, Calif. 90405
213-399-2200

Rose Electronics has introduced two variations of its networking unit that reportedly interconnects computers or peripherals using the common serial and parallel interfaces.

The Master Switch is said to combine the features of buffered peripheral sharing, data private branch exchange (PBX) functions, software-controlled switching and automatic switching into one unit. The N-Series for networking has up to 16 serial ports and one parallel port with a

transfer rate of 115.2K bit/sec. In the U-Series, each port is said to be programmable as serial or parallel, with up to nine ports available.

Prices range from \$395 to \$1,895.

Rose Electronics
P.O. Box 742571
Houston, Texas 77274
713-933-7673

Concord Communications, Inc. has announced a communications interface for linking personal workstations that adhere to IBM's Personal Computer AT standard to Manufacturing Automation Protocol (MAP) networks.

The Mapware Series 1210 reportedly conforms to MAP 3.0 and Open Systems Interconnect (OSI) standards, permitting

AT interoperability with otherwise incompatible computers and automation equipment. A companion programming aid, the OSI Programmers Package, is available for either MS-DOS or OS/2 and contains a tool box of utilities.

The Series 1210 with internal broadband modem costs \$2,295; with an internal carrierband modem, it costs \$1,895.

Concord Communications
753 Forest St.
Marlboro, Mass. 01752
508-460-4646

Mitek Systems Corp. has announced 3179G Graphics support for Transmission Control Protocol/Internet Protocol.

Using the company's Openconnect/Presentation Services, the graphics prod-

uct reportedly allows users on a TCP/IP network to emulate a 3179G/All Point Addressable device to gain access to graphics applications on IBM mainframe and midrange systems. The option is priced at \$795.

Mitek
2033 Chennault Drive
Carrollton, Texas 75006
214-490-4090

Electronic mail

GSI-Danet, Inc. has announced another version of its Ositel/400 global message-handling software system based on the X.400 Open Systems Interconnect standard.

The software was designed to inte-

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grate smaller X.400 electronic messaging systems that are based on personal computers and local-area networks, the vendor said. Several network management features have reportedly been added to the system, including data integration, a relational database and administration and system management functions. End-user license pricing starts at \$5,000.

GSI-Danet
Suite 300
1850 Centennial Park Drive
Reston, Va. 22091
703-758-0077

Modems/Multiplexers

Prometheus Products, Inc. has announced a 9.6K bit/sec. external modem

that offers throughputs up to 19.2K bit/sec.

The Promodem 9600 Plus reportedly follows CCITT V.32 standards and uses the Microcom Networking Protocol Level 5 protocol. According to the vendor, the modem implements full-duplex operation and will adjust speed to accommodate line quality.

Other features include a switch to transfer from voice to data calls, call-back security capability and support for both two-wire dial-up and leased-line operation.

The price is listed at \$995.
Prometheus Products
7225 SW Bonita Road
Tigard, Ore. 97223
503-624-0571

NEC America, Inc. has reportedly increased the error-free data transmission rate of its N9631 V.32 modem from 9.6K bit/sec. to 19.2K bit/sec. by adding Microcom Networking Protocol Class 5 with data compression capabilities.

The N9631 modem is said to comply with CCITT V.32 and other standards and supports 300 to 9.6K bit/sec. transfer rates. Other features include automatic speed detection, asynch and synch operation and two-wire dial-up and leased-line compatibility. The device is priced at \$1,095, and current users can upgrade their units for \$150.

NEC America
110 Rio Robles
San Jose, Calif. 95134
408-433-1250

Multi-Tech Systems, Inc. has announced a modem for IBM Personal Computers, ATs and compatibles.

The Multimodem 932EC is reportedly an internal board modem providing CCITT V.32 standard operation and operating asynchronously at 9.6K, 2,400, 1,200 and 300 bit/sec. According to the company, the modem is IBM AT command set-compatible and features V.42 error correction, along with data compression employing the Microcom Networking Protocol Class 5 protocol. Other features are said to include callback security, remote configuration capabilities and compatibility with various other standards.

The price is listed at \$999.
Multi-Tech Systems
2205 Woodale Drive
Mounds View, Minn. 55112
612-785-3500

Gateways, bridges, routers

Computrol, Inc. has introduced the Iso-comm series, a family of bridges for Manufacturing Automation Protocol (MAP) Version 3.0 and IEEE 802.4 local-area networks.

The series was developed to provide a cost-effective means of connecting any combination of MAP 3.0 network media while simultaneously increasing the network performance through segmentation, the vendor said. The product's intelligent addressing scheme reportedly offers network traffic control functions and assists in isolating faults to a local segment of the network.

The bridges range from \$8,282 to \$11,750.

Computrol
239 Ethan Allen Highway
Ridgefield, Conn. 06877
203-431-2000

Newport Systems Solutions, Inc. has announced a family of local-area network bridges that interconnects geographically separated networks.

The LAN2LAN bridges are reportedly designed to connect a variety of networks including Ethernet, Token-Ring and Arcnet architectures. Capable of being used with dedicated or dial-up lines, the bridges can support single- or multiple-hop interconnections with the same or different speeds, the vendor said.

Prices for the bridges range from \$2,695 to \$14,495, depending on options and port configurations selected.

Newport System Solutions
Suite 107
4020 Birch St.
Newport Beach, Calif. 92660
714-752-1511

Fibermux Corp. has unveiled its FX5500 Series, which includes three Fiber Distributed Data Interface (FDDI) network stations: a Token-Ring Source Routing Bridge, an Ethernet MAC Bridge and a Router for Transmission Control Protocol/Internet Protocol networks. The products include several features unavailable in older FDDI offerings.

A Network Station Management system provides monitoring, diagnostic and control functions for the FX5500 series. Pricing starts at \$22,000.

Fibermux
98310 Topanga Canyon Blvd.
Chatsworth, Calif. 91311
818-709-6000

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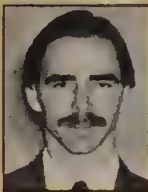


Susan E. Eldridge has been named director of management information systems at the Society for Human Resource Management (SHRM) in Alexandria, Va. Formerly the American Society for Personnel Administration, SHRM is the world's largest association of human resources professionals, with more than 40,000 members.

Eldridge oversees the selection and installation of all new hardware and software services and manages all programming and training for the MIS staff of 92.

She was previously a consultant in Xerox Corp.'s McLean, Va., office, specializing in systems integration for federal accounts. She was also manager of software development at Telecommunications Industries, Inc.

Eldridge holds degrees in economics and management from Oakland University in Rochester, Mich.



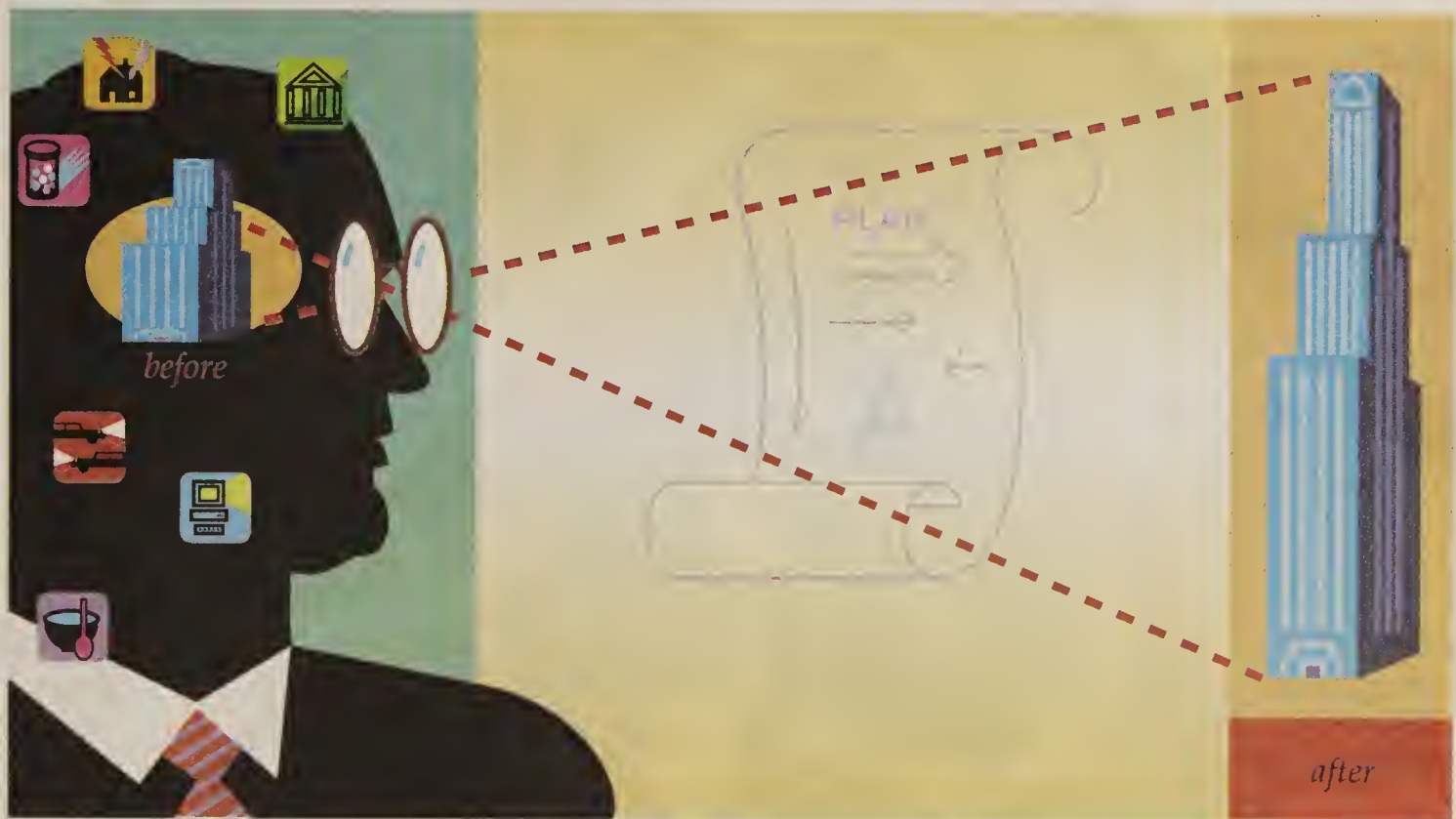
Chris A. Wolfe has been named director of management information systems at Danner Press/The Press of Ohio, a Canton, Ohio-based printer of magazines, educational workbooks and catalogs.

Wolfe was previously project manager at Leaseway Transportation, Inc. He holds a bachelor's degree in technical education and associate degrees in data processing and business management from the University of Akron. Wolfe and his family live in Stow, Ohio.

Who's on the go?

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Beyond mere automation



DAVID FLAHERTY

Change. It's a word that virtually all progressive business leaders believe is necessary for companies to remain competitive in a rapidly shifting environment. Nonetheless, it strikes fear in the hearts of countless executives, managers and employees who have become comfortable with established processes.

Information technology can be a powerful force to change the way people work and allow companies to rethink and redesign their business processes. Consultant Michael Hammer and others are adamant in their view that the IS function must do more than simply automate what is already in place.

Many companies have achieved major changes in business processes but not without financial and organizational fits and starts. At last month's Hammer Forum '89 in Boston, several of those companies sent representatives, some from IS and some from business management, to tell of their firms' experiences embodying the conference theme: re-engineering the corporation.

BY CLINTON WILDER
CW STAFF



One of the most critical decision makers in Pfizer, Inc.'s new product development does not work for Pfizer. No new pharmaceutical product can reach the market without the approval of a reviewer from the U.S. Food and Drug Administration (FDA), who must sift through new drug applications as long as 400,000 pages.

In December 1987, Pfizer's vice-president of clinical and scientific affairs decided there had to be a way to speed up the process. In just two weeks, the pharmaceutical division's 60 information systems employees, most of whom hold MBAs, developed a prototype of a personal computer-based system to replace the manual review process.

"We had to be like the pods in *Invasion of the Body Snatchers*," said Vita Cassese, Pfizer's director of pharmaceutical systems. "We had to jump into the reviewer's head."

The lightning-fast prototype was a key to success. "That was perhaps the most effective vehicle to get management to buy into the project," Cassese said. "There was a sense of ownership by the FDA reviewers and Pfizer management from the beginning."

Today, Pfizer lends an IBM Person-

al System/2 Model 80 with its computer-aided new drug application (CANDA) software to the FDA reviewers. The system has cut review time drastically, allowing the reviewer to do keyword searches and other database functions on the voluminous clinical test data in the application. Imaging technology allows Pfizer to submit physicians' original notes on the tests, rather than reports derived from the notes.

The CANDA workstation did not automate what was already being done; the FDA still requires the paper application. But it allows the FDA reviewers to make more efficient use of the information in reaching their decisions.

"We shook up some basic assumptions," Cassese explained. "It used to be that our regulatory affairs people were the only ones speaking to the FDA. We are changing the way Pfizer does business."



Any change in fundamental business processes through the use of information systems is hard, but it is even more difficult when your first attempt fails. That is what happened at Rubbermaid, Inc., but the Wooster, Ohio-based housewares and commercial rubber products maker revised its original approach to successfully revamp its

order processing system.

A manufacturer with some nine years of consecutive earnings growth quarters, Rubbermaid launched an attempt to simplify and automate its 21-step order entry, invoicing and shipping process in 1984. With networked minicomputers in each of its four lines of business, Rubbermaid designed and installed a common warehouse operation and inventory control system for each business.

It was a case of too much too fast, said Joseph Balnave, Rubbermaid's vice-president of corporate MIS. "We just could not process the volume in the time we wanted," he said. Back at the drawing board, Rubbermaid decided that mainframe horsepower was required and broke the new system down into three business-specific projects, two of which, the housewares and the Canadian business units, are currently up and running.

Among the benefits of the new system are the on-line availability of data about a customer's order status, the ability of an order entry manager to "reserve" inventory for a large customer and much more flexibility in allocating different products to different delivery schedules. That flexibility, consultant Michael Hammer pointed out, is critical for suppliers to large retailers that increasingly control the distribution channel.

Balnave said Rubbermaid's second
Continued on page 84





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TAKING CHARGE

Carl Shusterman

Time to open U.S. doors to world's IS talent



It's time for the U.S. to aggressively re-evaluate its immigration policy.

Consider the following: The National Science Foundation reports that 36% of all computer science graduate students in U.S. colleges are foreign-born, along with 42% of all engineering graduate students and 40% of math graduate students.

The U.S. Labor Department, in its study "Labor Market Shortages," warns of labor deficiencies in technological fields. The report states that "the need for computer systems analysts, scientists and health professionals will increase two to three times faster" than the growth expected among service workers as a whole. Finally, the U.S. Census Bureau projects that, sometime early in the next century, the U.S. will begin to lose population.

Where will new computer technology talent come from? Many information systems managers already know the answer. Qualified programmers and analysts are being recruited from Canada, Great Britain, Taiwan, the Philippines and elsewhere to fill positions for which no U.S. workers are available.

In many cases, these experts are playing crucial roles — developing software, starting companies or conducting breakthrough research. In an increasingly competitive world, the U.S. clearly needs a strategic immigration plan — one that embraces the precept that talented people are our best resource.

Our actual immigration policy falls short of this goal and is particularly prejudicial to the computer/information processing industry. An example is the newly proposed Immigration Act of 1989, which has passed the U.S. Senate and is being considered now by the House.

The bill would reform the U.S. system of legal immigration for the first time since 1965. It acknowledges our deficiency of technical and professional talent by providing for an increase in the number of foreign professionals allowed to enter the U.S. each year from 27,000 to 40,100. However, the bill would also make it more difficult for such professionals to qualify for U.S. residency.

Currently, foreign-born analysts or programmers with a bachelor's degree or equivalent may qualify to emigrate to the U.S. under the professional (H-1) visa category. Under the new bill, applicants would be required to hold an advanced degree — such as a master's or Ph.D. — to qualify for immigration under the professional category.

It is important to note that nonprofessionals may not qualify for temporary working status in the U.S. This means that all those foreign analysts and programmers who lack an advanced degree

could be excluded from working in the U.S. on a temporary basis.

This requirement is a particular roadblock for computer specialists, because of the relative newness of their discipline. Few academic programs for computer science existed 15 years ago, hence many seasoned foreign specialists lack even an undergraduate degree in the field. To require a graduate degree as a temporary working visa requirement disregards existing market conditions.

The IS community, and the U.S. economy as a whole, would be better served by an expansionist immigration policy — one that declares our "manifest destiny" to capture a select portion of the best and brightest minds in the world.

The policy should include the following:

- Increase the number of people allowed to obtain immigrant visas in the professional category to 120,000 per year. Currently, demand for these professionals exceeds 80,000 per year. However, a backlog has built up. By allowing 120,000 professionals to enter the U.S. each year, we would both fulfill current demand and deplete existing backlogs.

THE IS community, and the U.S. economy as a whole, would be better served by an expansionist immigration policy — one that declares our "manifest destiny" to capture a select portion of the best and brightest minds in the world.

- Remove the fixation on degrees as a means for demonstrating professional expertise. It is counterproductive to say that a computer science graduate just out of college may qualify for a visa when a computer science professional with 20 years of experience may not, simply because he lacks a degree in the field. This is not the way to attract the people who will do the profession the most good. Let experience count for something.

- Eliminate the labor certification requirements in shortage occupations. The visa procurement process should be streamlined for foreign professionals involved in such occupations. Currently, a U.S. company seeking to employ a foreign national must go through a long and tedious process of demonstrating that there are no U.S. workers available for the position, even if it is clear that the occupation is in short supply.

The payoff from this policy would be immediate, particularly in technological innovation. *Forbes* magazine reports that one-fourth to one-half of the Ph.D.s in top U.S. research labs are foreign-born. Every study I know of indicates that immigrants create jobs and stimulate the economy. Those interested in keeping the U.S. a technological leader should consider the benefits of a progressive immigration policy . . . and the consequences of a passive one.

Shusterman served as a general attorney and trial attorney with the U.S. Immigration & Naturalization Service from 1976-1982. He currently is a partner with the Los Angeles office of Barst & Mukamal.

Beyond

CONTINUED FROM PAGE 79

attempt had much more involvement of the users and much more prototyping. "Things about the business changed during code development," Balnave said. "We had to get the users more involved, and we also had to convince them to learn the system because they were going to own it."

What began as an 18-month project for Rubbermaid turned into a four-year effort, but Balnave has no regrets about the decision to abandon the initial approach. "If you implement a successful system, they'll forget the time it took," he said. "But if you put in a bad one, they'll never forget it."



Deregulation and globalization have dramatically changed the rules of competition in the banking industry. Money center banks of the past were primarily in the loan business. Today, banks must differentiate themselves by offering customers an array of services, nearly all of which depend on information technology.

Responding to those forces, Manufacturers Hanover Trust Co. earlier this year formed Geoserve, a business unit consolidating five functions: cash management, funds transfer, trade services, corporate and institutional trust and global custody and safekeeping. More importantly, the change transformed each of the five from back-office functions to businesses expected to generate a profit.

"Many people within Geoserve were formerly in cost centers," said Richard Matteis, executive vice-president of operating services at Manufacturers Hanover. "That was a major culture change."

Another change was centralizing critical functions of the five units. Although each business runs autonomously, they share a central sales force, sales and marketing database and IS support and development.

That centralization allowed the bank to consolidate five IBM data centers into two, saving \$1 million per month in processing costs, Matteis said.

Information systems are a critical part of each Geoserve business. "So much of our business depends on our electronic capability," said Patricia Sziklai, a Manufacturers Hanover vice-president.

As an example, among Geoserve's offerings to corporate treasurers shopping for financial services is a workstation called Interplex with software that integrates corporate accounting and investment functions. "The key was not the architecture itself," Matteis said, "but the insistence on integration and the ongoing involvement of MIS in the development effort."

To win the support of top management and end users, Matteis said the bank followed these guidelines to implement Geoserve, many of which applied to other case studies of change mentioned at the conference:

- Demonstrate the benefits from the start.
- Implement the project in phases.
- Get everyone thinking about both revenue and cost.
- Maintain communication with top management.



Simplification of business processes was a common theme throughout Hammer Forum '89, and one of the best examples was offered by Ford Motor Co. Ford essentially replaced a complex paper invoicing system for its suppliers with an electronic evaluated receipts settlement system.

Crossing functions such as receiving, purchasing, accounts payable and accounts receivable, the system simply authorizes payment to the supplier when the purchase order matches the material record of purchased goods in three data categories: the supplier code, part number and number of units ordered. In essence, the invoice was eliminated.

Such a system required changes in the purchasing department's work priorities, inventory record-keeping and other long-held ways of doing business.

The biggest challenge was not the technology but overcoming those ingrained habits, said David Barry, who supervised the project as manager of Ford's financial controls and management services department.

"The resistance to change is incredible," Barry said. "We had to motivate people with an average of 15 years experience to want to change. We thought it would take a year, and it's still going on after four."

Barry said the critical success factor in pushing for change was the involvement and leadership of Ford's top information

systems executive, S. I. Gilman.

"He convinced purchasing and the other departments of the need for it; then we announced it to the board of directors," Barry said. "That's Ford's way of making sure we do things."

The theme was echoed by Hammer and many other speakers: While innovation can be sparked anywhere in an organization, massive change of established business processes must be led by senior management.

"Once you've convinced the top level, you've got a certain entree," Barry said. "With that mandate, we were able to say, 'We are making the change, and you're either with us or against us.' We got enough momentum going that the herd instinct took over."

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CALENDAR

Many of the leading academics in the information systems community will ponder the next decade in IS management when the 10th annual International Conference on Information Systems is held in Boston Dec. 4-6. Keynote speakers are George C. Lodge, Harvard Business School professor, and Lester C. Thurow, dean of the MIT Sloan School of Management. Conference topics include the strategic implications of Europe 1992, the role of IS in transforming organizations and a debate on research methodology in IS. For more information, contact Judith Quillard, Center for Information Systems Research, MIT Sloan School of Management, 77 Massachusetts Ave. E40-191, Cambridge, Mass. 02139.

NOV. 27-DEC. 3

OSI Product Integration Conference. Washington, D.C., Nov. 28-Dec. 1 — Contact: Conference Manager, U.S. Professional Development Institute, Suite 221, 1734 Elton Road, Silver Spring, Md. 20903.

Principles of Retailing for Nonretailing Executives. New York, Nov. 28-29 — Contact: National Retail Merchants Association, Conference Registrar, 100 W. 31st St., New York, N.Y. 10001.

Achieving Lights-Out Data Centers Conference. Washington, D.C., Nov. 29-30 — Contact: Nelson Moskowitz, Manufacturing Institute, 23rd Floor, 437 Madison Ave., New York, N.Y. 10022.

Macintosh Business Conference & Exposition. Long Beach, Calif., Nov. 29-Dec. 1 — Contact: Nancy Thayer, MBC&E, 1 Forbes Road, Lexington, Mass. 02173.

Disaster Recovery Planning. New York, Nov. 30-Dec. 1 — Contact: Vern Lautner, 135 W. 50th St., New York, N.Y. 10020.

LAN Forum 1989 Conference. Atlanta, Nov. 30-Dec. 1 — Contact: Paul A. von Wupperfeld, InfoLAN Seminars, P.O. Box 162323, Austin, Texas 78716.

DEC. 3-9

Computer Graphics for Design. New York, Dec. 3-6 — Contact: Computer Graphics for Design, 45 Stephenson Terr., Briarcliff Manor, N.Y. 10510.

International Conference on Design for Manufacturability and Concurrent Engineering. Miami

Beach, Dec. 3-6 — Contact: Kim Takita, CAD/CIM Alert, 1050 Commonwealth Ave., Boston, Mass. 02215.

Automated Data Center Seminar. Newport Beach, Calif., Dec. 4-5 — Contact: KPMG Peat Marwick Main & Co., Executive Education Registrar, 3 Chestnut Ridge Road, Montvale, N.J. 07645.

Implementation Strategies for Integrating Expert Systems into Mainstream Computing. Arlington, Va., Dec. 4-5 — Contact: Donna Kacin, Decision Support Technology, 125 Cambridge Park Drive, Cambridge, Mass. 02140.

International Conference on Information Systems (ICIS). Boston, Dec. 4-6 — Contact: Judith Quillard, ICIS '89 Planning and Arrangements Chair, MIT, Cambridge, Mass. 02139.

Managing IS in the 1990s. Washington, D.C., Dec. 4-5 — Contact: Laurie Goudreau, Ouellette & Associates, 40 S. River Road No. 66, Bedford, N.H. 03102.

Supporting End-User Strategies. Washington, D.C., Dec. 4-6 — Contact: Technology Transfer Institute, 741 Tenth St., Santa Monica, Calif. 90402.

Winter Simulation Conference. Washington, D.C., Dec. 4-6 — Contact: Kenneth Musselman, Pritsker Corp., P.O. Box 2415, 1305 Cumberland Ave., West Lafayette, Ind. 47906.

Database World Conference & Exposition. Boston, Dec. 5-7 — Contact: Digital Consulting, Inc., 6 Windsor St., Andover, Mass. 01810.

Personal Computer Outlook. San Francisco, Dec. 5-6 — Contact: Technologic Partners, Suite 500, 419 Park Ave. South, New York, N.Y. 10016.

TechConnect West: Navigating the 1990s. Long Beach, Calif., Dec. 5-7 — Contact: Sara von Voss, TechConnect West, Suite 385, 8310 Capital of Texas Highway, Austin, Texas 78731.

Unicom Expo and Conference. Dallas, Dec. 5-7 — Contact: North American Telecommunications Association, Suite 550, 2000 M St. N.W., Washington, D.C. 20036.

Consulting Skills for the Information Processing Professional. Washington, D.C., Dec. 6-7 — Contact: Laurie Goudreau, Ouellette & Associates, 40 S. River Road No. 66, Bedford, N.H. 03102.

Government Communications Conference. Washington, D.C., Dec. 6-8 — Contact: Conference Manager, U.S. Professional Development Institute, Suite 221, 1734 Elton Road, Silver Spring, Md. 20903.

Human Resources Information Management Society Vendor Fair. New York, Dec. 6 — Contact: HRIMS, Suite 201, 170 Broadway, New York, N.Y. 10038.

Inventing the Future of Computing and Communications Seminar. Cambridge, Mass., Dec. 6-7 — Contact: Patricia Seybold's Office Computing Group, Suite 612, 148 State St., Boston, Mass. 02109.

Video Processing: The New Millennium for Computers and Communications Conference. Newark, N.J., Dec. 6-7 — Contact: Multi-Force Corp., P.O. Box 2355, Clifton, N.J. 07015.

Graphics and Image: The New Revolution. Santa Clara, Calif., Dec. 7 — Contact: International Data Corp., P.O. Box 955, 5 Speen St., Framingham, Mass. 01701.

DEC. 10-16

BGS User Group Meeting. Reno, Nev., Dec. 11 — Contact: BGS Systems, Inc., 128 Technology Center, Waltham, Mass. 02254.

AEC Expo Show & Conference for Architects & Engineers. New York, Dec. 12-14 — Contact: Expoconsul International, Inc., 3 Independence Way, Princeton, N.J. 08540.

Achieving Lights-Out Data Centers Conference. Los Angeles, Dec. 13-14 — Nelson Moskowitz, IIE Manufacturing Institute, 437 Madison Ave., 23rd Floor, New York, N.Y. 10022.

The Baltimore Computer Conference & Exposition. Baltimore, Md., Dec. 13-14 — Contact: Linda Carter, National Trade Productions, Inc., 313 S. Patrick St., Alexandria, Va. 22314.

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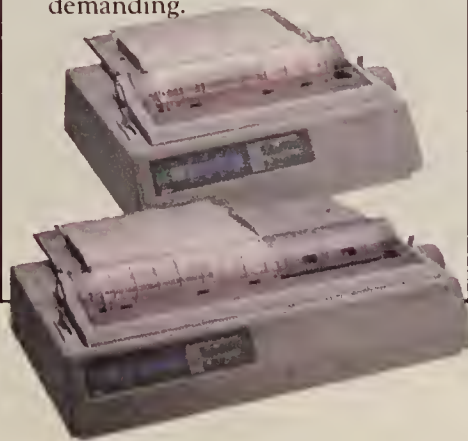
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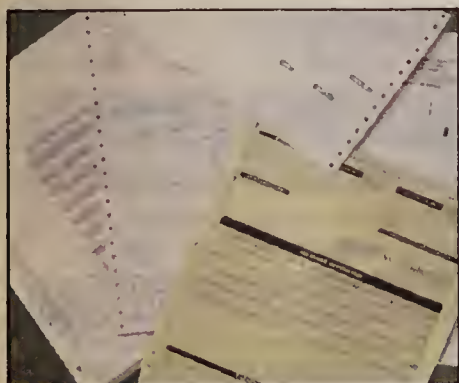


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TI's 8900 Series prints a variety of forms for a variety of users.

A one-two punch

Earthquake, Hugo test insurers' claim systems

BY ELLIS BOOKER
CW STAFF

On top of tens of thousands of claims still being processed in the aftermath of Hurricane Hugo in September, the insurance industry has had to handle thousands more filed during the past few weeks from policyholders in quake-ravaged San Francisco.

But the industry's information systems are handling the extra work well, according to insurance company IS executives.

"Sure, claims have increased substantially," said Norman Vincent, vice-president of data processing at State Farm Insurance Companies in Bloomington, Ill. "But we have disaster plans, and when Hugo hit we put them in motion."

State Farm expects to receive 125,000 claims for fire insurance and another 25,000 for automobile insurance, as a result of Hugo.

Like other insurers, State Farm made the most of the advance warning about Hugo, deploying people and computer equipment to the Carolinas before the storm hit land. Fifteen "disaster kits," each containing six Hewlett-Packard Co. personal computers, claim forms and other items, were shipped to Charleston prior to the hurricane's arrival. Another nine kits were sent to San Francisco after that city's earthquake Oct. 17.

The PCs processed claims and managed logistical items such as tracking the whereabouts of State Farm employees. But the PCs were not electronically connected to the HP 3000s in State Farm's 600 regional claim offices nationwide.

Vincent admitted that State Farm still relies heavily on stacks of paper summaries of policyholders during emergencies; after a policyholder is checked against these paper records, the PC is used to process a claim and issue a check. However, that record itself must be printed out and carried back to

the regional office, to be key-entered into a host database.

"It's what we have today," Vincent said, adding that he is looking into an electronic alternative to the manual approach.

Adjusting the load

Meanwhile, Allstate Insurance Co. in Northbrook, Ill., reconfigured its network to take the load off local operations in the Carolinas and San Francisco.

According to Robert Taylor, claim operations director at Allstate, the company first modified its telecommunications network for Hugo, using operators in claim offices in other states to handle a huge influx of calls from policyholders in affected areas.

Within a week after Hugo hit, causing an estimated \$6 billion in damage to the Carolinas, Allstate had begun shifting incoming calls to its three offices in South and North Carolina to its eight New Jersey claims offices.

"We redefined the dumb terminals in New Jersey to appear like the ones in North and South Carolina," Taylor explained. Reports taken in New Jersey are printed at the local offices in North and South Carolina. To date, the New Jersey offices have handled some 30,000 calls.

The experience with Hugo prepared Allstate for the San Francisco quake. Allstate was able to link its three Northern California offices with 10 centers in the southern part of the state by the next morning.

At The Travelers Corp., no change was needed in the company's IBM 3090 mainframes, operated in its Hartford, Conn., headquarters and in Atlanta.

"The primary issue is communications and power into the places where claims people work," said Larry Bacon, the senior vice-president of the data processing department.

Like Allstate, Travelers had backup kits shipped to the Carolinas and San Francisco. The one item Bacon will add to the kits next time is cellular phones.

Cramming for educational security

BY AMIEL KORNEL
CW STAFF

ANN ARBOR, Mich. — Universities across the country have begun linking their academic and administrative computer systems, giving students and faculty access to student records and other clerical information from personal computers anywhere on campus.

If done right, the linkup will reduce the work of the registrar's office and offer new time-saving services. If done incorrectly, it could become a hacker's dream come true, enabling intruders to peruse the records of their peers and even change their own grades.

The issue is so sensitive that the agenda of the 25th annual Educom '89 conference on IS in higher education, hosted here last month by the University of Michigan, included no sessions on data security, although it has long been a concern in the academic environment.

"In security, you do as much as you can, and you don't talk about it," explained Douglas Van Houweling, University of Michigan's vice-provost of information technology, and chief organizer of Educom '89.

Many of the 3,600 attendees were reluctant to discuss the issue. "I definitely wouldn't talk about it in public," said one IS manager who requested anonymity. "I don't even want to discuss it with my boss."

However, the topic is likely to come out in the open as more institutions seek ways to tie administrative hosts into networks used for research and teaching.

"They're all wrestling with this," said Sam Plance, director of telecommunications and administrative systems at the University of Michigan.

Gorilla cards

Pittsburg State University in Pittsburg, Kan., has started a pilot project. The school's 130 PCs are connected to a 10M bit/sec. fiber-optic Starlan network from AT&T, according to IS director Robert Keith. A 9.6M bit/sec. asynchronous gateway has been added to allow access to the Prime Computer, Inc. 9955 system used for administration.

Security and other features of the link have been beta-tested for the past six months in a pilot that gives 100 of the school's 6,000 students access to their records from PCs located in labs throughout the campus.

Floppy disks issued to each student are used to control access, much as automated teller machine cards are used in banking. If the password and information on the floppy gets the OK from the host system, the student gets access. If not, the floppy, called a Gorilla Card in honor of the school mascot, is ejected from the disk drive.

So far, so good, Keith said. "There is always going to be some malicious thing in a student environment, but by and large we haven't seen that."

Twenty of the school's 375 faculty members are being brought on-line. In three months, budgetary and grant information will be accessible over the gateway. By fall 1990, all students and faculty are expected to have Gorilla Cards.

The job is more complicated at large schools. The University of Michigan is considering an approach being developed at MIT in Cambridge, Mass. MIT's network security system has an access verification capability using encryption techniques built into the network rather than the host. In addition, he said, the university may replace ID cards with smart cards capable of generating new passwords for users.

Lights-out does not leave Mervyn's in the dark

BY ALAN J. RYAN
CW STAFF

HAYWARD, Calif. — The windowless room is devoid of human sounds. An electronic hum pervades the chilled air, and small green, red and orange lights look like warning signals as they flicker and blink in the dark.

Throw a switch and wait for the eyes to adjust. They focus on the centerpieces of the normally darkened data center: five Storage Technology Corp. 4480 Automated Library Systems, which rely on robotics technology to mount, eject and store tape cartridges without human intervention.

The room is in the data center at Mervyn's, a department store chain and subsidiary of Dayton-Hudson Stores, Inc.

When workers hear talk of achieving a lights-out data center zone, it is likely they will fear for their jobs. But that does not have to be the case, explained Dyane Albrecht, a shift manager at the data center, speaking at the recent National Retail Merchants Association's Retail Information Systems Conference (Rison) in New Orleans.

At Mervyn's, the head count of the operations staff was reduced by eight people by automating the data center, but there were no layoffs. "We met that schedule through promo-

tions and attrition," Albrecht explained. When the center was short of help before the switch was completed, Mervyn's brought in temporary data processing workers to tide them over.

Using the Library System Modules (LSM), "we perform more than 23,000 mounts and dismounts and 3,000 enters and ejects [into the library system] every week," she said. "We could not have supported that amount in a manual system." She said using the automated system, the mount time is typically just 40 seconds or less, saving an estimated 300 man-hours per week.

As a result, Albrecht said, the data center managers were challenged to bring the staff into a new era, which meant teaching new skills to existing workers. "We encouraged the staff to

cross-train," she said.

Because of the automation, the workplace environment has improved for the workers, Albrecht said. By creating zones — the DASD and tape libraries make up the darkened zone — the "command center" where the humans work can be an environment more conducive to humans. At Mervyn's, it is a carpeted office. "The workers don't have cold air blowing up their legs," she said.

Another area that is falling into the automated-process ranks at Mervyn's is the printing room.

By converting two of its printers to roll-paper feed, Albrecht said considerable time and effort has been saved. "A roll of paper can last six hours, as opposed to the workers having to change 30 to 40 boxes of paper during that time," she said.

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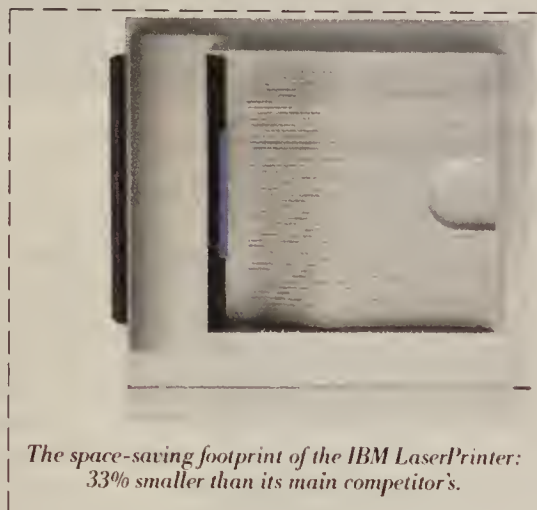
Another reason it's a new order of laser printer. Unlike its main competitor, the IBM LaserPrinter collates letterheads, second sheets and envelopes.** Most people would rather

give that job to someone else anyway. So it's nice to have a printer that will do it for you automatically.

Proof that less is more. The design and engineering of the IBM LaserPrinter are so advanced, it's got 60% fewer parts than the previous standard in laser printing. That means it's got 60% fewer things to loosen, snap or shear.

The solution is IBM. Yet, though it's a smaller, sleeker unit, the LaserPrinter comes from a company with a big tradition of service and support. Which is very reassuring when you decide to break away from an old standard to go with the new one for years to come.

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	IBM LaserPrinter	HP LaserJet Series II
Speed	✓ up to 10 ppm	up to 8 ppm
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Paper-handling options	✓ 500 sheets, 75 envelopes	15 envelopes*
Collates letters/envelopes	✓ yes**	no
Plotter emulation	✓ standard	optional
Resident fonts	✓ 10	6
Font card size***	✓ credit card	"8-track" cassette
Standard weight	✓ 33 lbs.	50 lbs.
Parts***	✓ 400	1000
Dots per inch	300 x 300	300 x 300
Printer emulation	✓ IBM, HP compatible	HP compatible
Printer engine	IBM	Canon
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See the new IBM LaserPrinter in action at Las Vegas COMDEX, November 13-17. The solution is at booth B358, East Hall.

Umbaugh

CONTINUED FROM PAGE 1

rotation through four departments. It gave me an early start on thinking about business and technology together."

While Umbaugh credits an accident, colleagues say they knew early on that his accession to senior management was a matter of time. He was a strong communicator of general business goals long before data processing people were exhorted to leave the safety of the glass house.

"He is a closet intellectual who is a success as a businessman," says Lewis E. Leeburg, director of information systems research at UCLA's Anderson School of Management and chairman of the Southern California chapter of the Society for Information Management. "He has always expressed IS challenges and concerns in general business terms. He was talking about strategic systems long before it was fashionable."

Umbaugh's stint at Bell Labs led to positions at TRW, Inc. and Computer Usage Co., one of the first software houses, in 1963. At CUC he met Carl Reynolds, recently retired MIS director at Hughes Aircraft Co. Reynolds was then president of CUC, and the company was working on a range of products, including early work on American Airlines' Sabre system and one of IBM's original operating systems.

In 1970, a team from CUC including Umbaugh and Reynolds went to work for Hughes Aircraft on a facilities management project. "In 1971, five of us from CUC displaced Hughes' senior systems staff," Umbaugh says. "If my major had been science and biology, that might never have happened." Umbaugh left soon after, but Reynolds stayed on for nearly 20 years as the company's IS director before stepping down this year [CW, Sept. 4].

That first rotation at Bell Labs provided the foundation for a broad-based view of business for Umbaugh that he says is too rare among IS managers today. It is one of two primary strengths he credits with moving him out of DP and into non-technical management.

"The guys who achieve escape velocity out of MIS into senior management will understand the financial workings of the business," he says. "There are too few that can communicate that information technology must be seen as an asset rather than as a cost. You need the guys who punch out the Cobol code, but that is not a springboard to anything."

Umbaugh says senior management's view is critical to success, both of projects and careers. "If the president of your company sees computers as a necessary evil, when the going gets tough he will cut them out. If they are seen as an asset, they will be strengthened when times get hard."



ALAN LEVENSON

Mission Land's Umbaugh stressed strong business ties before it was fashionable

Umbaugh's view of business and technology is one he has put to good use to ensure that preparation met opportunity throughout his career. After leaving Hughes, he went to work for Southern California Edison. SCE Corp., Edison's holding company, also owns Mission Land. After several years in the data processing shop there, Umbaugh was put in charge of DP and corporate planning.

"It was unheard-of in utilities, and unusual anywhere at that time to have the data processing guy in charge of corporate planning," Umbaugh says. "It happened because I had a mentor in the company, and he wanted to force me to be more business-oriented."

Look for a mentor

Umbaugh credits retired Southern California Edison President Tom McDaniel with overseeing his career and helping him move through the ranks. "The concept of a mentor is not used enough in corporations today," Umbaugh says. "You can't rely on luck, on a computer truncating the 'L' on an application, to get the best people to the top of an organization."

A mentor is the second factor, along with his broad business view, that Umbaugh credits with achieving "escape velocity" out of MIS, but it is evident that he would have moved ahead pretty well on his own. Although he slings an irreverent sense of humor, Umbaugh is an intense man. His outside time is dominated by teaching IS courses at the business school of a small local college. The shelves in his office are lined with textbooks and journals on information technology that he has written or edited. He is quick to dissect a question and turn the pieces back on the source for explanation.

Umbaugh has an extraordinary interest in an area he worked hard to leave behind. "IS is an intellectually invigorating field," he says. "But I don't believe in the title CIO. If people move from IS to senior management it is a function of the men, not because the function itself is critical."

Despite his own success, Umbaugh doubts that systems will ever be a fast track to upper management. "If someone came to me and said he wanted to become CEO and had a chance to go from IS to marketing, I would say, 'Take it as fast as you possibly can.'"

Mission Land has been around in various forms since 1913, but about three years ago, corporate parent SCE Corp. looked at the slow growth of the utility business and decided to put increased resources in the land development company. As director of data processing and corporate planning at Southern California Edison, Umbaugh sat on a senior management council and had a broad view of the business. He was asked to take the president's job at Mission Land.

"We wanted to get more serious, and we needed a fresh look at running the company," Umbaugh says. "I was glad for the chance. A midlife career change with no risk really pumps the juices."

The company has been blessed by being in booming southern California. Investments made in the 1960s, 1970s and early 1980s have contributed to a five-fold increase in equity over the last three years. According to Bank of America analysts, Mission Land possesses one of the best cash flows in the country.

"You can make mistakes in Southern California real estate," Umbaugh says. "But we worked hard and lucked out."

For Umbaugh, that's a familiar theme.

EXECUTIVE BRIEFS

Papers sought

Office automation specialists are invited to submit papers for the Office Automation Society International (OASI) 7th Annual Conference. Theme for the program is "Office Automation: A Multi-Disciplined Environment."

Topics can be related to office automation management, technology or applications. Some topic areas that could be addressed include artificial intelligence, career development, communications, desktop publishing, executive involvement, future of high technology, hard-

ware, software, standards, security, personal computers, image processing, local-area networks, information centers, office automation systems, optical storage, pilot experiences and word processing. Other topics can be addressed as well.

Selected papers will be published in the conference proceedings. Some authors will be invited to present their papers at the conference.

A brief summary of the paper must be submitted before Jan. 1, 1990. The conference will be held June 13-16 in Falls Church, Va.

For more information, contact the Proceedings Committee, OASI, P.O. box 374, McLean, Va., 22101.



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EXECUTIVE REPORT

KEEPING UP WITH SERVICE EXPECTATIONS

Companies take a systems approach to customer service

BY J. SCOT FINNIE

It is 8:00 in the evening when suddenly you remember that you had wanted to investigate a possible mistake in the service charges assessed to your checking account. It's too late now to call the bank. All the offices have been closed for hours. So what do you do?

In most cases, the answer would be that you scribble yet another note to yourself about things to do tomorrow. If you happen to be a customer of Fidelity Bank NA in Philadelphia, however, what you would do is pick up the phone and dial the customer service number, where a service representative will take the information and initiate an inquiry, using an internally developed mainframe-based system called the Customer Relationship Inquiry Service System (CRISS).

CRISS is a system that Fidelity has developed incrementally during the past several years, building outward from the skeleton of a pre-existing back-office system that did little more than track the volume of customer inquiries. Although the creation of CRISS was initially prompted by an administrative crisis that developed when Fidelity acquired another bank and found itself mired in the resulting tangle of records, the system has become a cornerstone of Fidelity's strategy for capturing and retaining customer loyalty.

The banking industry has never been known for placing a high value on the quality of service offered to customers, says Patrick Swanick, Fidelity's vice-president of customer service. In fact, he says, "The industry has historically been ridiculed for its lack of attention to this area." The prevailing attitude, Swanick explains, has been that all banks offer essentially the same products and services and suffer from the same failings, so customers really had very little choice.

Fidelity, however, decided



KEN KAUFFMAN

Fidelity's Swanick says service investments buy customer loyalty

that it could break away from the pack by using information systems and telecommunications to fuel an aggressive push in the area of customer service. The bank took its cue, Swanick says, from other service industries. Hotel chains such as Hyatt Corp. and Marriott Corp. elevated themselves within their industries on the basis of customer service. Federal Express Corp. turned customer service into a competitive advantage in the package-delivery business. American Express Co. built a strong base of customer loyalty the same way. "And we believed that we could also make a difference with a system like CRISS," Swanick says.

One of the things that CRISS has accomplished is eliminating the fragmentation of knowledge

that once crippled Fidelity's customer service operation.

"Three years ago, the way we handled service was in a decentralized environment with a different customer service area and phone number for every product we offered," Swanick recalls. "If you had a checking account, credit card and loan, you had to call different numbers for each service; each area knew only its own product. In many cases, the customer service reps didn't even know where to send someone for other services."

Now, all customer service representatives are linked through CRISS with a central information file, residing on the bank's IBM mainframe, so no one who receives a call from a customer can justifiably say, "That's not my department."

Equally important, branch and loan officers do not have to be surprised by customer problems. All such personnel have the ability to access CRISS records to check on who has been calling about what outside normal office hours.

Working overtime

In fact, since the installation of a voice-response system almost two years ago, some types of customer services are offered even beyond the extended weekday and Saturday hours that the customer service department keeps. With the addition of hardware from Sytellect, Inc. in Phoenix, Fidelity now offers its customers the ability to check on account balances and loan-payment status automatically using their own phone keypads.

According to Swanick, "There's just no end to the types of customer services you can offer with a system like this. Frankly, we're not using it to its full capability."

In general, corporate America is just now becoming aware of the importance of customer service and how information systems can be used to support it. This awareness is beginning to translate into action.

Clearly, interest in customer service is on the rise. In a recent survey of top executives from Fortune 500 companies, Forum Corp., a Boston-based management consulting firm, found that "quality of customer service" was picked as the top-ranking performance issue by 86% of respondents, beating out obvious favorites such as long-term growth, employee productivity, period financial results and market position.

In a related question dealing with the relative importance of various external factors, 94% ranked "customer need/preference" first in a field of 14. Significantly, the runner-up, "competitor activity," was selected by only 56% of the respondents.

Experts offer many hypotheses for what is causing the increased emphasis on customer service, but most concur that the chief factor at work

INSIDE

How GE stays close to customers

Page 103

Fashioning garments to fit demand

Page 98

Finnie is a free-lance writer based in Ridgefield, Conn.

Customer

FROM PAGE 91

here is competitive pressure.

"Many companies are able to replicate every product and service their competition offers in a very short time," says Mary-Anne Rasmussen, senior vice-president of service quality at New York-based American Express Co. "The difference is how they can provide that quality of service, how they deliver on their promises."

In many cases, firms have found that IS holds the key to improving on promise delivery.

IS departments support other departments using systems to promote customer service and develop software to carry out

billing document that comes through American Express' doors is digitized and stored on optical discs. The original paper version is then discarded.

Country-club convenience

Image processing allows American Express to offer what it calls enhanced country-club billing. Rather than giving its customers the original carbons of all bills it receives from merchants each month, the company prints condensed versions of them on regular-size pages.

The process is faster and more efficient, and the company says 90% of its customers prefer this method. It also greatly reduces the likelihood that a record of charge could be sent accidentally to the wrong customer.

ganization to accommodate technology. And it's all been driven by customers."

The IS department began its quest to improve customer services in late 1985, he recalls. It began with the premise that if IS could offer something that gave better service to their customers, that should take priority over cost benefits.

The only downside to IS involvement in customer service, according to Erbrick, is that the infrastructures IS builds blend into the process and disappear from view.

"The tragedy is that the work that IS is doing is not always perceived as customer service work," he adds. "It is not visible to the customer and that can be frustrating to IS managers. So much so, that they keep my office on the first floor — they're afraid I'll jump out," he quips.

Company executives often do notice the contribution, however. Executives at many firms say that they are unable to talk about customer service without talking about their IS departments.

"Computers are an important part of everything we do here," says Terry Wilson, vice-president of customer relations at mail-order catalog Lands' End. Like many successful catalog and direct marketing companies, the Dodgeville, Wisc.-based Lands' End puts a lot of emphasis on customer service.

Because sales and product fulfillment performance are important determinants of a catalog customer's perception of service, catalog houses rely heavily on their computer systems. Catalog companies must be able to check order status; change, cancel or delay orders; change addresses; and provide a host of other customer service-oriented functions requiring sophisticated computer systems.

Functions such as on-line inventory control, computerized inventory management, automated order picking and barcode control of shipping methods help Lands' End get an order to a customer in only a few days.

Sell me, don't just tell me

Improved efficiency is not all that matters to customers, however. People buying products by phone do not just want fast response — they also want information about the merchandise that they cannot glean from the pages of a catalog. In other words, they want to talk to salespeople, not order-takers.

This is another area, according to Wilson, in which IS can step into the breach. "All of our product information is kept on an extensive database to which our customer reps have access," he says. "When customers call wondering how much our long underwear is going to shrink, how much care it needs, whether its sizes tend to run large or small, our reps can tell them be-

cause they have the information on-line."

Capturing information that can be fed back into departments to improve procedures is, of course, just as important as collecting information to give out. According to Curt Barry, a Richmond, Va.-based management consultant specializing in data processing systems design for retailers and direct marketers,

"THE REAL challenge we've had at UPS in recent years has been changing the face of the company's organization to accommodate technology. And it's all been driven by customers."

FRANK ERBRICK
UPS

some catalog firms are also using information systems for functions such as tracking lost sales resulting from stock shortfalls.

The bottom line, says Bro Uttal, co-author with William Davidow of *Total Customer Service: The Ultimate Weapon*, is that "companies need to do more to stimulate complaint behavior — and not by turning out worse products or services."

Instead, companies have to start seeking out customer input — good and bad — in organized ways, so that they can better tailor their products and services to market requirements.

In order for this to happen, customer service really needs to become a more organized and

pervasive activity than it has been. Uttal, a New York-based consultant specializing in technology management, advocates doing away with customer service departments, making customer service everyone's job.

"Customer service departments are frequently 'ghettos' whose principal purpose is to shield the corporation from problems, not solve the customers' problems," Uttal says. "And one of the vices of having a customer service department is that it allows those in other departments to say that customer service isn't their job."

Information systems that automate the collection, communication, management and analysis of customer data can be a major force for spreading the message of customer awareness throughout an organization.

Customer service experts believe that getting an accurate, comprehensive report on customer service complaints is already becoming as important as a sales report, which has always been vital to most companies.

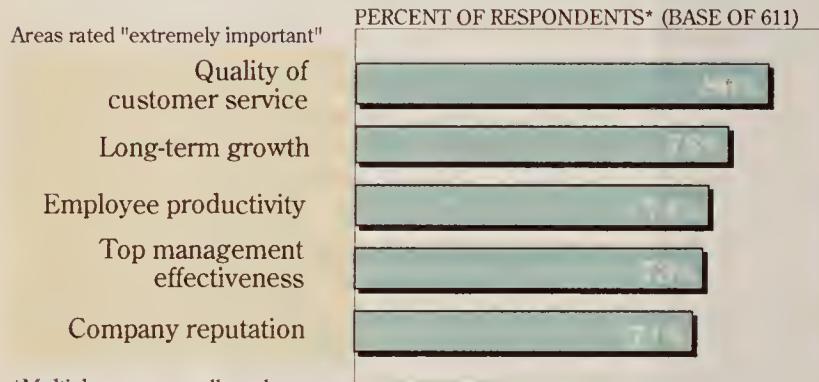
Chairman Ted Pamperin at Tweeds, a Patterson, N.J.-based fashion apparel catalog firm, says he believes customer service reports merit close scrutiny. At Tweeds, monthly reports list all customer calls, with about 100 possible reasons for these calls, some of which are good — such as a request for a catalog. "Each month, I check closely to make sure that the good reasons for calls are increasing and that the bad reasons are decreasing," Pamperin says.

Tan, don't burn

Sometimes, analysis of customer complaints can turn up new market opportunities. John Goodman, president of Technical

Performance gauge

The customer is key in measuring a company's performance, say Fortune 500 executives surveyed



*Multiple responses allowed

SOURCE: THE FORUM CORP.

CW CHART: SHELLEY BRENNER

customer services. Also, some IS departments get involved in this area by managing customer and product information databases, using systems to measure customer service performance and using statistical analysis and other means to analyze complaint or transaction data to spot customer service trends and avert bottlenecks.

American Express was an early starter, beginning the quality/service program that Rasmussen heads up in 1978.

That past is really just a prelude, though, according to Rasmussen. The job will not be over until customer service becomes a clear and present objective for every person in every department of the company.

Toward that end, American Express has routed some of its best technical and business thinkers onto a project dubbed "Genesis." Now three years old, one of the Genesis project's main goals is the standardization of data structures throughout the company's worldwide organization to facilitate the assembly and maintenance of comprehensive and uniform customer files.

Another major focus of the project is finding ways of turning state-of-the-art technologies into customer applications.

American Express has some experience in that area. It was one of the first firms to apply image processing to the cause of customer convenience. Every

This technology is also starting to play a role in customer service at United Parcel Service of America, Inc., headquartered in Greenwich, Conn.

Last month, UPS implemented the first stage of a plan to facilitate package tracking through use of image processing. According to Frank Erbrick, vice-president of IS, 25 UPS operating centers around the country are equipped to scan and upload information from digitized routing labels, which will help customer service representatives (CSR) locate a package in transit.

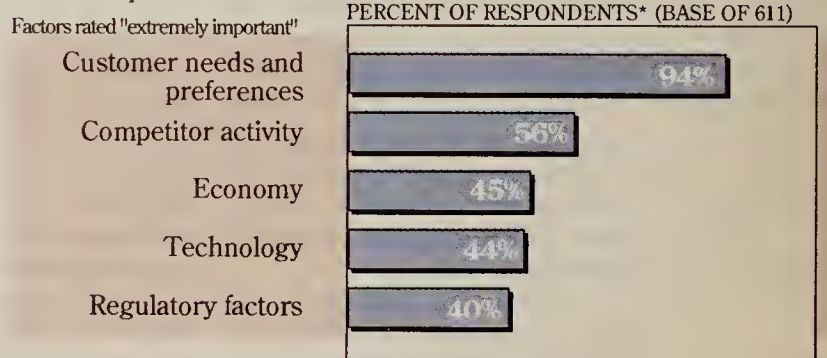
Images of the labels, including recipient signatures and time and date of delivery, can be called up on-screen in less than four seconds by representatives at 65 customer service centers.

The company plans to complete its label processing system, expanding it to operating centers nationwide, by early December. Down the road, Erbrick says, UPS hopes to be able to make all its tracking information, including the digitized images, available to its corporate clients through electronic data interchange.

According to Erbrick, more and more companies are becoming customer service driven, and customer services are predominantly technology driven. "The real challenge we've had at UPS in recent years has been changing the face of the company's or-

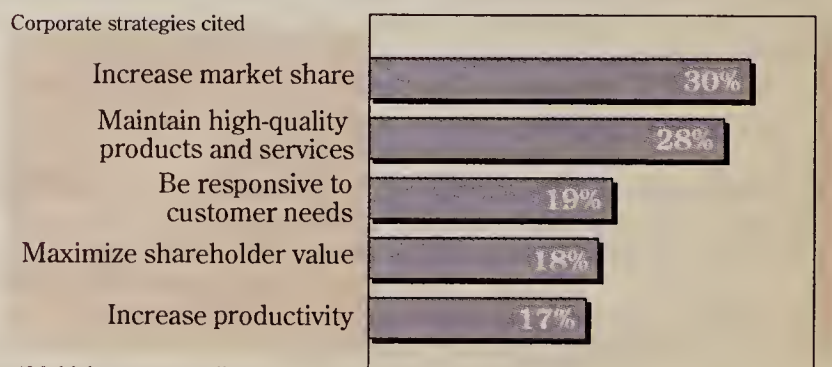
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Consumer requirements exert the most important external influence on business operations



... but still ruled by the bottom line

Despite an increased focus on customers, companies remain devoted to market share and shareholders



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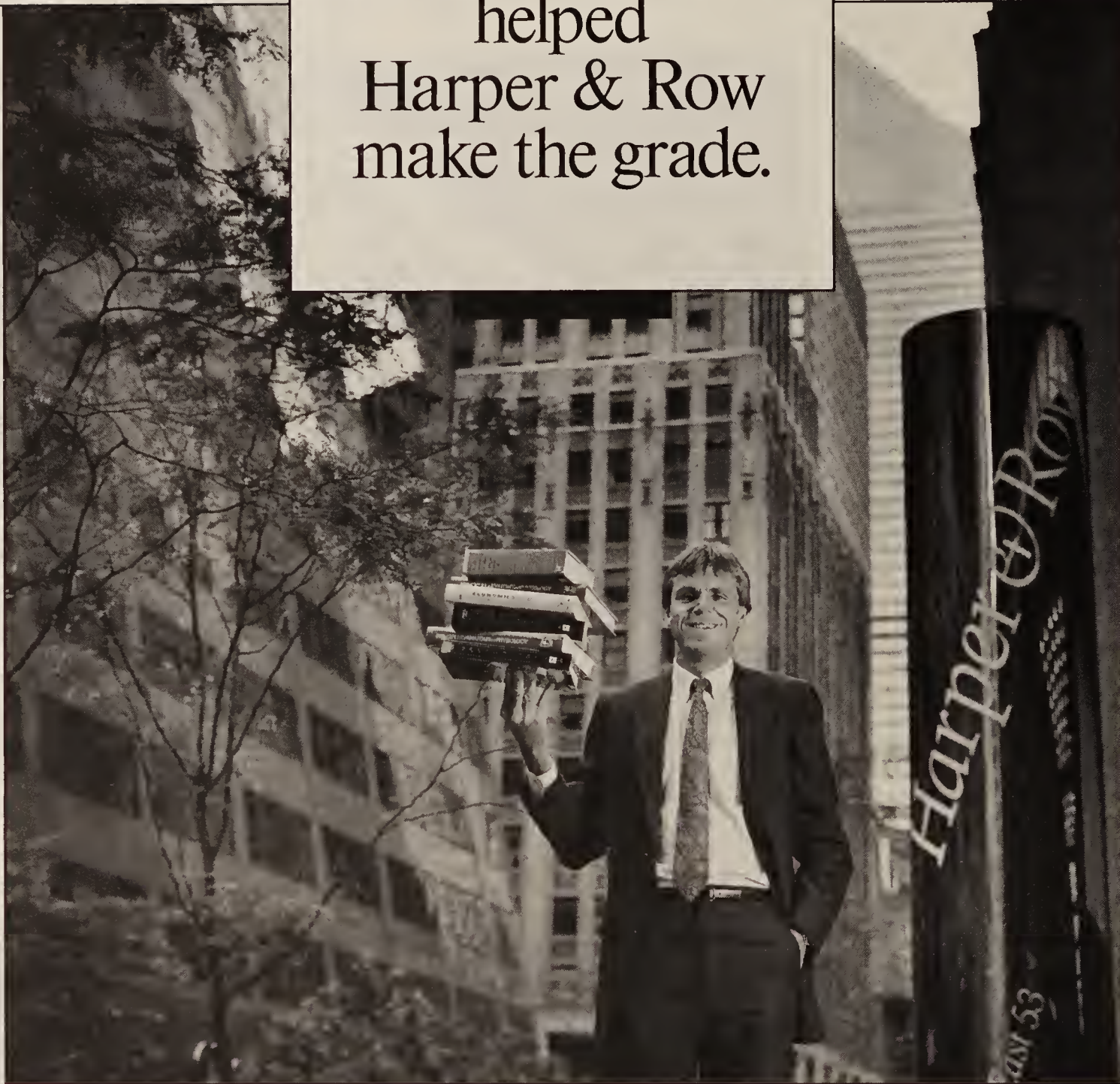
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Assistance Research Programs, a Washington, D.C.-based research and consulting firm, recalls when one of his clients, a pharmaceutical company, analyzed customer service data by type of request and found that a lot of customers were calling up and asking for sunscreen in December.

In the middle of winter, not many stores carry sun products, but a lot of people vacation in tropical climates at that time of the year and want to be prepared. Until the analysis was done, the company did not know this was an issue, and the only thing the CSRs could do was give the customers lists of stores they could try.

When the frequency of this type of inquiry came to light, the company decided that a better response would be to offer to send the product by mail. Much to the company's surprise, this service gesture garnered not only good will but also a significant amount of revenue.

Similarly, using information systems to track and analyze customer input has been known to turn up process problems that, while easily remedied, would have been hard to spot by any other means.

More than saying you're sorry

At Fidelity, for example, Swanick says that CRISS makes it possible to isolate patterns in complaints and track them back to their root cause. "Instead of just handing a customer back the amount that he has been overcharged on a money market checking account and saying, 'Sorry. We hope it doesn't happen again,' we can figure out that there seems to be a problem with the calculations for all interest-

bearing accounts that are on a mid-month billing cycle and have a programmer fix it."

The strong movement toward information system-based customer services can affect IS departments in potentially profound ways.



MANY COMPANIES ARE able to replicate every product and service their competition offers in a very short time. The difference is how they can provide that service, how they deliver on their promises."

MARYANNE RASMUSSEN
AMERICAN EXPRESS

According to Garret Sheldon, president of the Potomac Group, an information technology consulting company in Cambridge, Mass., IS departments are already devoting a lot more resources to support of services for business customers than they used to. Sheldon, who worked as a systems developer at MIT for 13 years, says that IS departments in companies with strong service orientations currently devote about 30% of total man-hours to support that function. And, he adds, that percentage is likely to rise even further: "What used to be an MIS department is now becoming a customer service department."

Both IS managers and consultants note that developing and supporting customer service systems not only requires extra time but often fundamentally alter operating methods. According to Erbrick, "For things that are unique and indigeneous to the company, as customer ser-

That blurring can also carry across company lines. "In the 1970s, everything was run out of IS. Since then, the move has been toward decentralizing IS and getting users involved," Sheldon notes. "Now, because of the emphasis on customer service, we are beginning to decentralize across company boundaries by putting PCs and distributed capabilities into customers' offices."

American Express is doing this with airline companies. Because cardholders often use the card for travel expenses, American Express works very closely with airlines. When customers have complaints about airline services and billings, they often bring them to American Express.

"To try to minimize the inconvenience to the airlines and expedite solutions," Rasmussen explains, "we set up an on-line inquiry and request system with the airline companies so that we can move from our information database right to the airline. If we need to make adjustments to airline records, we can make them automatically on-line."

If you are an IS manager facing an increasing emphasis on customer service at your company, what should you keep in mind? Two things, Erbrick says. First, don't let the marketing people force you to try to do something that you know you cannot do. Second, deliver on your promises. "Not offering services is intolerable, but offering services that don't work is positively anathema. There's no surer way to be out of business than breaking promises to your customers." •

How technologies spawn new customer services

Many kinds of technologies are being drafted for the cause of customer service, frequently combined in entirely new ways.

In turn, these combinations of telecommunications and data processing technologies are producing some innovative variations on customer service.

Integrated Services Digital Network services such as caller identification allow American Transtech, located in Jacksonville, Fla., to provide contract customer assistance services for large corporations, such as Pan American World Airways and Ford Motor Co.

One of the services American Transtech provides is called Dealer Locator. The way the service works, if a Ford owner moves to a new area and wants to know where the nearest Ford dealer is, he can call an 800 number to find out. When he calls, his phone number is identified by caller identification and a computer search matches the location of the phone number with the location of the closest Ford dealers. Their names and addresses pop up on the screen.

At Fidelity Bank, Patrick Swanick is looking at the possibility of enhancing the bank's voice-response system to permit automatic calculation of likely interest rate yields on certificates of

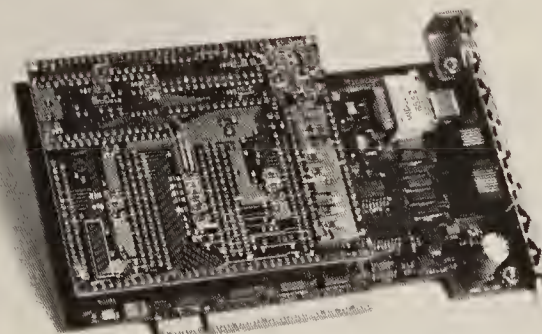
deposit or monthly payments on loans by type and length for customers who phone the bank's automated inquiry Infoline Service.

As vice-president of customer service, Swanick is also evaluating the idea of offering customers the option of receiving facsimile statements on request by linking the computer, telephone and fax machines. The appeal of such convenience, Swanick says, could be strong enough to support offering this as a fee-based service.

At United Parcel Service, the next step is an adaption of Loran technology that will allow the company to electronically pinpoint the locations of its delivery trucks and compete head-to-head with rival delivery giant Federal Express Corp.

UPS, according to Gene Hughes, manager of strategic planning, is about 80% finished with a project that is creating a database containing a map of its delivery areas throughout the U.S. That database, when used in combination with the Loran tracking technology, will allow it to build computerized maps with lights that move as the trucks move. In that way, UPS will always know, to within a few hundred feet, exactly where its trucks are located, so it can quickly deploy the closest truck to a customer requesting immediate pickup for overnight delivery.

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INTERVIEW

Consumer-oriented production

Just-in-time methods reduce costs, says Du Pont's Peter Butenhoff. Quick Response goes a step further to get the right product to the right customer at the right time.

In retail goods industries, customer service is closely intertwined with a strategy called "Quick Response," which involves using a variety of information and communications technologies to collect better and more timely information on market demand. It also speeds the flow of that intelligence through the production and delivery channels.

Peter Butenhoff is director of business development and international trade affairs at Du Pont Co.'s textile fibers department. Butenhoff has a long-standing involvement in the development of the Quick Response concept, including participation in the Crafted With Pride in America Council. He spoke recently with *Computerworld* Associate Editor Laura O'Connell.

What are the objectives behind the idea of Quick Response?

The main objective is to have the right product in the right place at the right time and the right value for the consumer.

The idea of Quick Response was first developed in the early and middle 1980s, at a time when the retail apparel industry was faced with double-digit growth in imports. We were very much concerned about whether we were even going to have an industry in the 1990s.

We knew that there were a lot of hidden costs associated with importing and felt that we should be able to capitalize on our proximity to market here in the U.S. The real key, we realized, was finding a way to eliminate all the waste that results from long pipelines and all the mistakes that are made along the way.

Exactly how is this accomplished, and what role does information systems play?

Timely, accurate communications are right at the heart of making Quick Response work, and that's where the systems come in. They capture data about size, color and style at the cash register, through the use of bar codes and scanning. They also allow us to build databases that can be analyzed to help make better decisions on what

products should be stocked on the shelves and even how they should be displayed.

You can almost put systems on automatic, as far as replenishment is concerned, and either replenish the basic items as they sell out or replace them with new items that are tailored on the basis of the information you've accumulated. That's a little more quantitative than the seat-of-the-pants planning that drives so much of retailing and product development these days.

You mentioned bar coding and scanning. What other technologies are part of Quick Response?

One of the others that's really critical is just-in-time delivery and what I call short-cycle manufacturing, which you can do with a modular system or teamwork approach. For putting basics into inventory, a slower, methodical manufacturing process works fine; it's just a question of what's the most cost-effective way to run the plant. But when you get into trying to respond to fashion, time is of the essence, and that means having a flexible manufacturing operation.

Of course, that doesn't do you any good unless you've got the fabric and other materials you need to put into the plant. So you also must have partnerships with the suppliers of the fabric and other materials in order to be able to execute it all on a short time cycle.

How does what you are talking about differ from what the automotive industry is doing?

The car industry is one that has been well publicized as being very active with just-in-time delivery and partnering with suppliers and use of electronic data interchange to facilitate those activities. In fact, they're further along in that than we are.

The difference in Detroit, though, is that it was really more of a cost-reduction-driven strategy than a consumer-service-oriented strategy. Even though General Motors and others had gone to just-in-time delivery of parts, they had not gone to Quick Response; they cannot build a custom-ordered car for you. Yet now they are beginning to move

in that direction as well. I think they're beginning to understand that Quick Response is a partnership relationship; it's not just just-in-time delivery, which is really a cost-driven strategy.



How can implementation of Quick Response methods and technologies draw companies closer to customers?

I think Quick Response is a very logical, fairly straightforward strategy for better serving the needs, wants and desires of the consumer.

If you're a retailer and you're vertically integrated, you would delay decisions on what to produce until the last possible minute. For fairly basic items, you might make them pretty far in advance and at the lowest cost mode and build some inventory to serve the customer out of. For higher risk items, like the more fashion-oriented items, you'd delay the decision as long as possible so that you could accumulate as much information about what was selling well in the marketplace, what the consumer trends were.

By doing that, you minimize your mistakes and, hence, your markdowns and lost sales at retail, because you'd have more of what the consumer wants to buy available in the right selections.

Is Quick Response tied to the expanding interest in providing better customer service?

Yes. And I think that's what will let it evolve in the future into the fashion side of the business. Some of the really successful retailers on the fashion side understand that and are beginning to practice it. I think the people

who continue to work very far ahead with little understanding of what the consumer's really interested in are going to find themselves continually caught in the problem of having short skirts when their clientele isn't ready for short skirts.

How actively should IS personnel be involved in these efforts?

The systems people in any organization have got to take a lead. They cannot do it alone, but they've got to do it. They can develop the systems; they can educate their organization; and if they are empowered by their corporate management, they can even set up demonstration projects in one department or another to show the benefits of using those systems to really implement Quick Response.

You really need a broad-based corporate task force to oversee a project like this, making sure programs are started, monitored and used properly, with the results shared. The systems folks are in an excellent position to make a significant contribution to these efforts and, by extension, to the business.

Has Quick Response improved Du Pont's customer service?

Yes. It has improved our service to customers who are ready to commit to the kinds of linkages and sharing of information I've been talking about. We're aggressively driving that way, with both our customers and suppliers. On the whole, I'd say that it has improved our sensitivity to their strategies and issues.

Can you measure the benefits?

What we've seen in all the Quick Response projects is that sales increase a minimum of 20% and up to 50% when you put these methods into practice. It simply means being in a better in-stock position with the things that the consumer wants to buy. Therefore, you end up with a happier consumer because they can find what they're looking for.

What is the major stumbling block?

This isn't something that's easy
Continued on page 102



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ATA

Must the voice be human?

A well-designed combination of voice-response technology and tightly integrated mainframe databases can work wonders on the efficiency of a customer support department. However, don't expect the idea to be an easy sale with top management, says Michael Kennedy, a senior consultant at Arthur D. Little, Inc. in Cambridge, Mass.

"We generally find that higher management opposes the use of voice-response systems," Kennedy says.

"They feel that such systems take away the personal touch and can make the company seem insensitive to customer concerns."

In fact, he notes, customers are likely to resent long periods waiting on hold or rushed and incomplete explanations more than being routed through an automated response system. To prove that point, Kennedy suggests having doubting executives try to place billing inquiry calls themselves. Objective evidence can also be mustered with voice traffic studies to track the number of calls abandoned on the way to a service representative.

The real key to making an automated response system effective is in the planning, Kennedy says. Before putting a voice system in place, a firm should do a careful analysis of why people call and which calls truly require human assistance.

Where the lines are drawn will depend on the company, Kennedy says; such decisions should be driven by the goals and priorities of the business rather than the technology.

What does not vary is the fact that in every business, there are some contacts that can be handled just as satisfactorily by a voice-response system that costs 40 cents an hour to run, as by a service representative whose hourly cost is \$40.

Butenhoff

FROM PAGE 98

to do. You must have partnerships with the suppliers [of all your materials] in order to be able to execute it all on a short time cycle. It's a long tortuous supply chain, and it's characterized by a lot of adversarial relationships.

So you need Quick Response working through the whole chain, from suppliers through customers?

Oh, yes. I think many people in the industry look at Quick Response as primarily a systems issue in a replenishment approach. But as soon as you get beyond basics, it really is going to require a vastly different way of working with the supply chain.

You're going to have to have relationships with the whole chain in order to make that kind of a partnership really work well.

Is that going to require substantial changes in operations? Or can you implement Quick Response over existing procedures?

I think it really requires a very fundamental change in the way

many retailers work. It's going to require making commitments and holding open the buy for your suppliers to work very close to the selling season and treating them as suppliers of first choice. The culture of the industry usually goes against that. And senior management has to understand the different way of operating that's implied by Quick Response. •



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How GE uses technology to turn back the clock

BY LARRY STEVENS

General Electric Co. invests a lot in creating a corporate persona that customers can relate to. When it runs television advertis-

Stevens is a free-lance writer based in Springfield, Mass.

ing for its lighting products, for example, GE delivers soft-focus portraits of family life that warm up the already fuzzy slogan, "We bring good things to life." And at the GE Answer Center in Lexington, Ky. — one of the first and most ambitious customer support lines in the country — a

considerable array of information technology is deployed to create an old-fashioned atmosphere of down-home service.

"Our whole purpose," says N. Powell Taylor, general manager of the Answer Center, "is to make the customers feel that we care about them and that, al-

though we're a big company, we are accessible."

Judging by the numbers, the message is getting through. When it opened its lines in 1981, the center was handling a modest 200 calls per week and employed 20 staffers. Today, it has 250 employees handling more

than 6,500 calls each week relating to 8,500 products spread across 120 product lines. Customers call for information on products prior to purchase, for the locations of local service centers or retail outlets and — the most frequent type of call — for instructions on how to use a product that they own.

With the information systems and communications infrastructure it has created over the past eight years, the center is able to answer 95% of all questions on the first call and, at the same time, glean valuable information about the customer base.

You wash, I'll dry

At the heart of the system is a custom-built mainframe text retrieval system, complete with a database with the answers to more than one million questions. When an operator gets a question such as how to eliminate film on dishes, he selects keywords from the customer's request and types "film," "dishes" and "dishwasher" into his operator console. A successful search will yield a paragraph or so of information that is read back to the customer over the phone.

Although the system cannot anticipate every question, it has an extremely high hit rate. The 150 front-line operators access and then read aloud a paragraph that answers the customer's question 80% of the time.

If a question is too difficult for the front-line operator, the call and a summary of the question is transferred to one of 50 technical specialists on-site, who are more familiar with the database and GE products. To avoid redundancy, the specialist also receives a description of the search procedures already tried.

Using more sophisticated, or perhaps simply more persistent, querying of the database, these specialists are able to provide immediate answers for about 75% of the calls routed to them (about 20% of the total calls received by the center).

The remaining 25% must be researched further. The specialist promises the customer a return call and sends the information through the network to the Training and Data Group, which is responsible for investigating tough subjects and entering fresh data into the system when products are introduced or changed or a question not covered in the database seems likely to recur with some frequency.

Requests for product literature are forwarded electronically from the front-line operators to the company's Literature Fulfillment House, where the proper manual or brochure is selected and a mailing label is automatically generated.

If a customer wants the name of a local service center, the front-line operator accesses the location by ZIP code, reads it to the customer and then forwards



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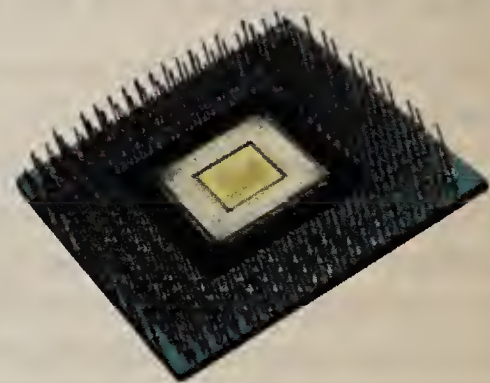
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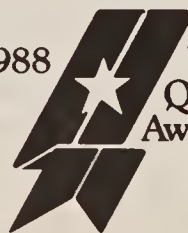
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Building On Beliefs



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the customer's name and address, via a telecom network, to the service center.

Whenever some follow-up action is required from a service center, the operator can elect to "close-loop" the request, which causes the system to signal a supervisor if the follow-up action has not been completed in a specific time period.

The text-retrieval system, which boasts 1/2-sec. response times, took the GE Answer Center 11,000 man-years to develop in the early 1980s; it is now almost entirely user-driven, according to Carole Stagnolia, manager of information systems. This allows the three analyst/programmers at the center to work on refinements and enhancements.

The most recent such project was completed six months ago when all GE de-



GE's Answer Center

partments were given direct access to many of the statistics generated by the center's database and the ability to create their own reports.

Product development teams use the

information to uncover areas in which customers are experiencing problems that may indicate the need for a design improvement. Marketing groups scan the statistics for clues to customer interests. Advertising departments look for the times and dates when customers phone about specific products to help them judge which media campaigns are having the biggest impact.

The largest new task that programmers will be responsible for is a conversion project to move all the data from its current residence on a Bull H. N. Information Systems, Inc. 3DPS90 mainframe system to three IBM 3090s run-

ning DB2. To avoid overloading the center's resources, Stagnolia is phasing in that conversion. The first stage was completed a month ago.

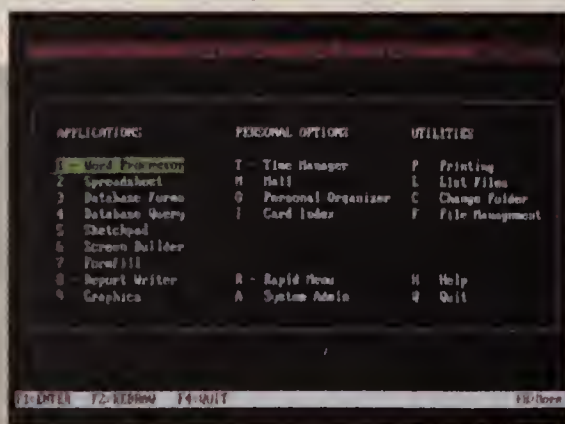
Besides launching new projects, programmers monitor the system. Whenever a new service is added or a large amount of new data is keyed in, the network is checked to ensure that it maintains a subsecond response time. Programmers recently instituted a system that allows supervisors to rate the quality of answers customers are receiving.

In a very real sense, the goal of Stagnolia's group is to make the system appear as simple as possible to customer and internal users alike. "Technology should be as invisible as possible to those who use it," she says. •

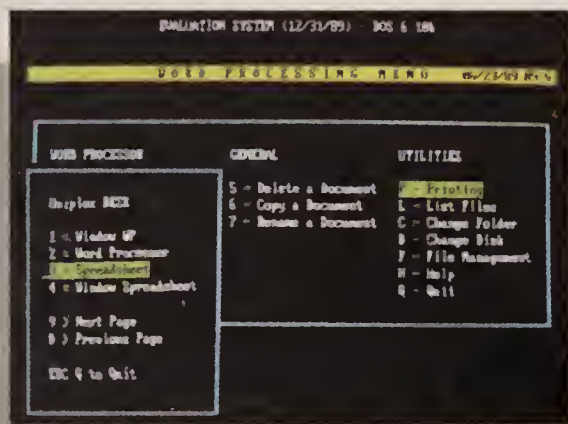
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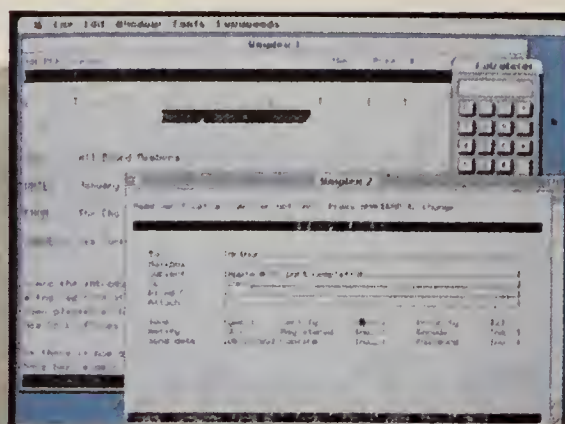
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Predesign checklist

What's different about designing customer service systems? A lot, says Bro Uttal, a New York-based consultant and co-author of *Total Customer Service: The Ultimate Weapon*. Uttal offers the following recommendations for information systems managers considering customer service projects:

- Be aware of the role the customer will play. Significant efficiencies can be gained by involving the customer in the service. For example, investing in self-diagnostic equipment could allow the customer to fix problems on his own.

- Consider the degree to which you want to centralize. Unlike applications for which the best solution is either central or local control, customer service often demands a mix of both. It may make sense to come up with two systems: a centralized problem-solving facility and a local system for field offices.

- Response time in a centralized facility is important in any application. But in customer service, it is even more critical. You have a relationship with the customer, and you do not want to jeopardize that by making him wait for service.

- Records of customer transactions should be designed to avoid redundancy. Instead of making each person who handles a call repeat the sequence of access commands, you should design a system that allows easy and virtually instantaneous transfer of the complete records between different workstations.

- Understand the environment you are in. Often, customer service representatives are poorly paid, part-time workers who have neither the skills nor the authority to solve many of the problems customers bring to them. This means that an effective customer service information system will have to cross organizational boundaries because the customer service group will not be able to respond effectively without access to other departments.

Beyond hypertext hype

What's going on behind that pretty user interface?

BY LIORA ALSCHULER

How many articles on hypertext start with a gee-whiz scenario such as "Imagine being able to read every word ever written about coffee machine maintenance, delivered fast and just the way you like it, with a few simple key-strokes"?

Hype has threatened to overwhelm hypertext ever since the publication of Ted Nelson's brilliant 1974 cult classic, *Computer Lib/Dream Machines*. In this trippy, free-form book — cleaned up and reissued last year by Microsoft Press — Nelson uses drawings, various type sizes and other devices to describe a new world in which all information is contained in one big hypertext (which he describes as "nonsequential" writing). The book's original hand-drawn cover featured a caped, flying hippie and this hint of drama: "Super-student Meets Hypertext!"

Given such science fiction-like roots (Nelson repeatedly quotes from the film *2001: A Space Odyssey*) and later promises of information delivered "your way," it is little wonder that many organizations have dismissed hypertext as a nice but impractical daydream unsuited to everyday applications. Indeed, many first-generation hypertext applications offered an attractive user interface but lacked supporting tools.

As a result, information systems managers tend to fall into two groups: those who have accepted hypertext uncritically

Alschuler is project manager of emerging technology at Miles-Samuelson, Inc., a New York technical publishing house.

and have been burned and those who cannot be bothered to fight through the promotional smoke. Both groups need to ask, "Is hypertext more than just a pretty facade?"

The answer — with a few qualifications — is yes. Some serious problems remain, however. In the two years since the release of Apple Computer, Inc.'s Hypercard and resurrection of Nelson's hyperdream at the Hypertext '87 conference, several full-scale business and technical hypertexts have emerged. Notable examples include an electronic version of the *Oxford English Dictionary*, a reference work called the "Engineering Data Compendium" and a new Ford Motor Co. project called the Service Bay Diagnostic System (see story page 111). Moreover, a new generation of hypertext products, many of which use expert systems or databases to handle underlying tasks, are starting to appear.

Discussion among vendors, users and researchers continues this week in Pittsburgh at Hypertext '89, a three-day conference sponsored by the Association for Computing Machinery. Sessions will explore key topics such as hypertext architectures, interfaces and applications.

Lessons learned from such gatherings and from pioneering organizations can teach volumes about what does and does not work in hypertext and how much it all costs. If the right lessons are learned, many more solid commercial applications can be expected to fall to Earth in the near future.

Hypertext hype is attractive because it addresses a wide-



MARK FISHER

spread need: Many organizations require a better way to access complex technical information. In many companies, such information has outstripped the capacity of traditional documentation to describe it.

Computer documentation, for example, often occupies more bytes than it describes and can be outdated before it is published. Hypertext offers an attractive solution.

"For millennia, we have had

to structure our information to fit the confines of paper," explains promotional literature from Owl International, Inc., a Bellevue, Wash., publisher of a hypertext product called Guide, which the company says is the first commercial hypertext for personal computers. "But ... we can now give documents many shapes. ... We can

- **Lack of underlying structure a problem**
- **Books still better for many uses**
- **Embedded expert systems show promise**



Trusthouse Forte Hotels
sleep easier since AT&T
Computers checked in.

*Left
Kerry Bapp
AT&T Data Sales Executive*

*Alfred Olin
Vice President Sales
Encore Systems, Inc.*

*Bill Hootis
Executive Vice President
Marketing & Sales, Trusthouse Forte*

San Diego, California
April 27, 1989

Trusthouse Forte needed to automate its reservations and property management system so it could manage its properties more efficiently and improve customer service. AT&T and AT&T Authorized Value-Added Reseller, Encore® Systems, Inc., created a solution for over 500 hotels by integrating the reservation system with a property management system. AT&T's Jerry Trapp and Encore's Mike Otten join Trusthouse Forte's Bill Hanley to retell the story.

Bill: Dated. That's how I would describe our old reservation and guest billing systems. They just couldn't reserve rooms or bill our guests fast enough. On top of that, some hotels were manually booking rooms while others were running a smorgasbord of property management software packages.

Jerry: Because nothing was plugged into your central reservations system. Your guests were not getting the service they deserved. And it was driving your hotel managers nuts as well.

Bill: And when your customers don't get service, that's when you lose their business. You can see why I needed a lodging expert like AT&T, who understood my business well enough to customize a bulletproof solution to it. Who could seriously integrate software and hardware without trashing the huge investment I'd already made in my current system.

Jerry: You needed to turn the dated system into something you could really use. Fortunately, AT&T has solved a number of problems like yours in the lodging industry. And we chose to team up with another lodging pro like Encore Systems, Inc. Together we could really zero in on your special software demands.

Mike: That's right. We knew right off

that you needed a lot of flexibility built into the system. For example, it had to be able to be used at any size hotel—from 40 rooms to 400.

Bill: Which is critical. We want the smaller hotels to get as much out of it as the large hotels. And they are. Now our hotels have the ability to create guest profiles. Plus customer billings from restaurant to phone to movie charges are all automated. Now our managers can spend more time on their most important job—keeping our guests happy.

Jerry: Another nice advantage is that they can, in seconds, interactively reserve rooms all over the world. And then monitor and report results back to headquarters. So headquarters, in turn, can use that data intelligently for designing future marketing programs.

Mike: The quality of service you're giving your guests is soaring.

Bill: You said it, Mike. In fact, we've heard good things from the hotels that have the system rolling. Service standards are better and reservations are made in a flash. And satisfied guests are what we want most in this business.

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structure the document to fit the information."

A functional definition of hypertext is an electronic text that lets users skip between related but noncontiguous pieces of text. The logic behind the approach is that no one reads such documentation front-to-back. Hypertext lets the author, and in some cases the reader, link any piece of text to any other piece of text, in any order. Proponents hold that this is the best way to find needed material quickly. Technical information such as reference guides, maintenance and procedural manuals, specifications, proposals and encyclopedias are considered ideal candidates for hypertexts. But if hypertext is all it is cracked up to be, why aren't organizations' bookshelves filling up with hypertexts to replace yards of traditional documentation?

Behind the pretty face . . .

One basic problem is that the first generation of commercial hypertext has not replaced the book structure with anything better or even as good. So far, old-fashioned books are winning.

"If you can reach for a book and get an answer more quickly, you don't need hypertext," says Tom Rearick, an artificial intelligence engineer and president of Big Science, Inc. in Atlanta, which is working on the problem of computerized text delivery. "There is no justification for hypertext unless it is faster, cheaper and more up-to-date."

One problem slowing the acceptance of hypertext has been a tendency among users to be wowed by its pretty face, ig-

noring what is behind the initial interface.

According to Janet Walker at Digital Equipment Corp.'s Cambridge Research Laboratory in Cambridge, Mass., when most people think of hypertext, they think only about the interface, forgetting the underlying data structure and the tools required to create that structure. Thus, Walker, a cognitive psychologist who herself has written technical documentation, explains that buyers are not as critical as they should be.

Another big problem is that first-generation hypertext applications tended to overstate what could be delivered in a larger project. Small-scale hypertext demonstrations often look great, says Bob Glushko, senior research scientist at Search Technology in Atlanta, but the reality often is different. The reason is that hypertext demos made with off-the-shelf software do not scale up to larger projects very well.

Although a demo connecting a few pieces of information, paragraphs or pictures can be assembled while you watch, a full-scale hypertext requires thousands of links between thousands of disparate pieces of information. Therein lies the big problem with many first-generation hypertext packages: lack of structure.

Text structure refers to headers, footers, subtitles, use of italics and boldface, tables of contents, indexes, headings, subheadings and other publishing conventions that help readers locate the desired text from the thousands of pages. Glushko says unstructured hypertext is fine if you want to browse from the history of the buffalo nickel to Buffalo, N.Y., to Buffalo

Springfield to buffalo mozzarella. But business and scientific applications seldom wish to do such free-form linkages.

To make hypertext work for business, methods are needed to guarantee that users can find the correct information quickly without wading through extraneous material. The reader needs to see all relevant portions in an order that makes sense. Real-world demands require a system to create such links. Even if you manage to insert all needed links manually, unless you track them or arrange them systematically, users will not be able to verify or update the links.

BUT IF HYPERTEXT is all it is cracked up to be, why aren't organizations' bookshelves filling up with hypertexts to replace yards of traditional documentation?

In their rush to break away from "linear" books, hypertext developers have given themselves the task of reinventing the wheel. Their biggest challenge is to put meaningful structure back into the on-line presentations. Commercial hypertexts provide tools to link disparate pieces of information but provide no built-in structure for doing so. Unfortunately, many first-generation commercial hypertext programs required rebuilding text structures by hand.

When hypertext links are put in by hand (called "hand-crafted" or "hand-tagged" hypertext), no mechanism exists to ensure that links will occur between all the pieces that need to be linked, that users can go from piece to piece in an orderly manner or that pieces can be updated systematically. A hand-tagged hypertext not only lacks an updating mechanism, it also makes users update the links themselves. The problem is that links requiring updating may not themselves be documented.

Unfortunately, most commercial hypertext programs — Guide and Hypercard, for example — require the hypertext author to manually connect and structure all text and graphics. According to Walker, what most people call hypertext is actually a "point-and-shoot" interface. Such an interface lets authors position the cursor on a word, click or press Enter and instantly bring up a related piece of text. Users of such systems often forget about the underlying structure of the text and what it takes to create that structure.

Expert systems offer hope

Another problem is rooted in the difference between the nature of books and computer screens. Because word processors and desktop publishers format text for printers — not for on-line retrieval — readers cannot flip through page headers in a word processor the way they would with a book.

In electronic text formatted for print, readers can search for and find a character, word or word string, but this does not convey text structure. Faced with long, undifferentiated character strings of word processors, it is easy for users to get lost in unstructured hypertext. What are the alternatives?

A number of organizations have turned to artificial intelligence and expert systems to structure hypertext. As an alternative, corporations of all sizes are start-

ing to see text-to-hypertext conversion as an area that could yield big savings in time and money while improving presentation quality. The second generation of commercial hypertext products that exploits rather than ignores text structure will soon be available.

While not everyone agrees that text-to-hypertext and diagram-to-diagnostics can be automated, most agree that using a document's existing structure is better than creating a whole new structure for large on-line presentations.

Hypertrans from Texas Instruments, Inc., for example, automates hypertext

translation by creating a database. Hypertrans creates a database structure that works with the ASCII file of the original text and that can be used to support any hypertext interface, including Guide, Hypercard, Sun-based KMS or Discover, a hypertext interface developed by TI.

TI's hypertext experience dates back to 1980, when the "Speak-and-Spell" educational tool became the model for an error-reducing hypertext system for the military, later scrapped because it was too expensive to create applications.

Steve Morriss, a TI engineer on the original project, says that hand-tagging text is a "black-art" that has given hypertext a "bad rap" and has priced it out of the market. The biggest problem in creating an affordable system, Morriss says, was to capture the implicit intelligence of the printed text. "I used to open a reference book to the first picture. I was never taught how to use its structure, but the structure is 90% of the story."

Hypertrans and similar text-to-hypertext systems now under development adhere to a book's structure without recreating it by hand. Now available as a service product, TI will offer the product at a price tag of around \$500, through a word processing vendor, later this year.

(TI's pricing shows the relative worth of the interface and the data structure: The interface costs \$50, a data-conversion service costs approximately \$30 per page. While this price would add between 10% and 20% to the cost of producing technical documents, it may turn out to be cost-effective if it can convey the original print structure on-line and avoid custom programming.)

While costly, the true advantage of Hypertrans is that it puts the structure of the original work into a database rather than into an undocumented, and perhaps subjective and incomplete, flat file. Text linked with a database gives the author systematic methods to establish and keep track of the links. Other instances of AI amplifying the intelligence in existing documents, rather than replacing it, are the conversion of the "Engineering Data Compendium" to compact disc/read-only memory by Search Technologies in Atlanta and the electronic *Oxford English Dictionary* from the Centre for the New Oxford English Dictionary at the University of Waterloo in Waterloo, Ontario.

Similar to the way Hypertrans uses existing text structures to create hypertext, I-CAT from Automated Reasoning in

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New Ford diagnostic system to debut in 1990

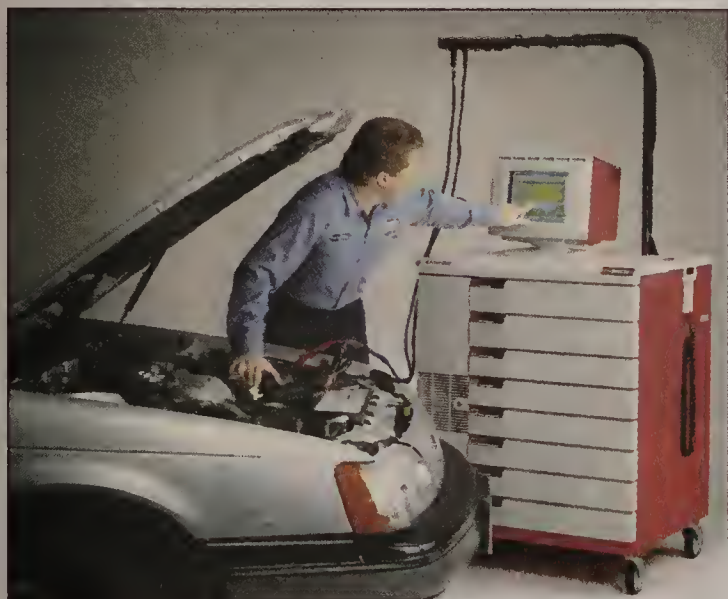
The days of fixing your Ford on a Saturday morning with a timing light, a wrench and a cold drink may be gone forever. Today's high-tech automobiles make it much tougher for backyard mechanics to diagnose and fix problems, a fact acknowledged by the nation's largest auto maker.

Over the next year, Ford Motor Co. expects to wrap up a four-year project — potentially worth up to \$42 million — that could eventually place sophisticated automobile diagnostic systems in as many as 1,500 large Ford dealerships nationwide. The company's Service Bay Diagnostic System (SBDS) is an IBM OS/2-based application that Ford officials say will use hypertext, directed by an underlying expert system, to replace traditional printed manuals and analog testing devices. The project is among the largest to date using those fledgling technologies.

Six limited pilot systems have just been released in Florida and Michigan, the company said. A full pilot is expected in the first quarter of 1990, and a final product release is set for the end of 1990, a year behind the original schedule.

Under development since 1986, SBDS was designed to automate shop-floor diagnostics and testing by advising, guiding and assisting company service technicians.

Systems developers say that automated diagnostics are virtually required to properly maintain today's electronically controlled engines. Conventional troubleshooting devices "don't have the ability to probe and analyze like a computer can," says Gary Kahn, director of Product Development and Services at the Carnegie Group, a Pittsburgh consultancy that is developing the expert system components of SBDS.



Ford revs up high-tech auto testing system

Developers say that the complexity of today's engines, coupled with the number of models and model years, exceeds the capabilities of existing information delivery systems.

The major components of SBDS are custom diagnostic hardware based on personal computers from Hewlett-Packard Co. in Palo Alto, Calif., the primary

contractor and project leader; an expert system from the Carnegie Group; and a hypertext interface from Owl International, Inc. in Bellevue, Wash.

With SBDS, a Ford technician can enter the vehicle model and year into the PC using a touch screen, describe the symptoms and perform the prescribed tests. SBDS may ask for more tests or indicate what parts to adjust or replace.

Hypertext provides a user interface to the underlying expert system, which will provide diagnostics and will communicate with the hypertext when it needs input or has output.

Besides its scope, the Ford project is notable because it illustrates the difficulties of integrating hypertext with expert systems. Ford officials say that on the road between the computer-aided design station and dealer's garage, its plans for both the expert system and the hypertext have shifted gears.

According to Leonard Tedesco, service systems design section supervisor in charge of SBDS development at Ford, the expert system component of SBDS has been transformed and nearly halved in size.

Emphasis has shifted from developing the hypertext user interface to translating existing repair and diagnostic manuals to hypertext. The conversion is necessary so that information contained in existing manuals can be used on the new system.

The original concept called for the expert system to create diagnostic routines instead of merely translating existing routines into code.

In the new approach, the expert system will capture the knowledge of human experts. Ford engineers will write diagnostic and troubleshooting routines — much as they would for conventional documentation, Kahn says — which will then be translated into machine code.

While Ford has not yet put a final sticker price on SBDS, it indicates that it will be priced competitively with analog diagnostic units that cost about \$28,000 each, bringing the potential total value of the SBDS project to around \$42 million if 1,500 systems are sold.

LIORA ALSCHULER and JOSEPH MAGLITTA

Roslyn, N.Y., automates diagnostics using the diagrammatic portion of a technical document. I-CAT is a logic-based, as opposed to frame-based, rule-based or example-based, expert system.

A block diagram in a standard maintenance manual is an array of rectangles connected by arrows. Each box represents a circuit element, a single component or an entire system; the arrows represent the signal flow between these elements. Generally, blocks represent a higher level of abstraction than a schematic diagram.

I-CAT inputs modified functional block diagrams, or "logical block diagrams," and outputs interactive diagnostic routines. I-CAT suggests tests, analyzes feedback and pinpoints faulty parts. It can connect directly to automated test equipment and provides failure analysis for engineers. It also considers testing and replacement costs and previous failure rates when recommending repair procedures.

Both products, Hypertrans and I-CAT, use AI to capture and enhance the information in technical documentation instead of using AI to recreate it. Because of this, their vendors claim these products are more cost-effective than systems that build hypertext and diagnostics from scratch. Because of their cost, format flexibility and ability to run on standardized platforms, vendors say that these products can be more widely distributed than custom-built systems.

Symbolics, Inc. in Cambridge, Mass., sells Document Examiner, a writing tool, and Concordia, a user interface. Both were developed for internal use and later

offered as a stand-alone system for Symbolics- and LISP-compatible Macs.

Although the last two years have seen many advances in the development of hypertext, several challenges remain. First-generation hypertext products provided a user interface without a data structure. Constructing large-scale business and technical applications from these hypertexts is like building the space shuttle *Columbia* from the control panel of a Mercury capsule.

The next wave of hypertext products substantiate the hypertext interface with automated text-to-hypertext conversion or with other structural techniques like document databases. Developers must establish standards for hypertext exchange and a set of terms that distinguishes among different types of hypertext. And they must provide organizing tools for hypertext authors.

On a broader scale, companies and courts must continue to sort out the complicated legal issues surrounding hypertext. What are the copyright issues surrounding text-to-hypertext conversion? Do authors control the format of the converted work? Also to be assessed is the impact on hypertext of Computer-Aided Acquisition Logistics Support, the military's mandate to place all technical materials into electronic form.

Ultimately, hypertext will survive if it solves problems and does things better and cheaper than existing methods. "People shouldn't buy a product because it's hypertext," Big Sciences' Rearick concludes. "They should buy it because it solves a business problem." •

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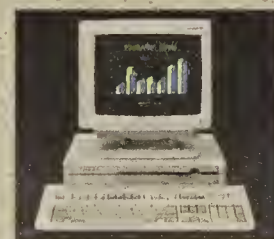
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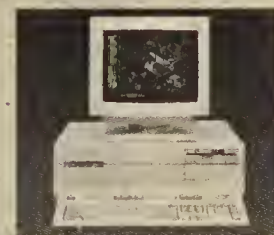
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* The Wall Street Journal (1987) — "Survey of the Information Processing Marketplace".

* The Adams Co. (1988) — "Information Systems Management Study".

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INDUSTRY INSIGHT

Patricia Keefe

Slamming 'open' doors



Can we just slam the window shut on anything that starts with "open" or ends with "ware?" Both are particularly noxious in their repetitiveness and notable for their uselessness.

Think about it. You've got Open Systems Interconnect, Open Desktop, Openview, open systems, open computing and the Open Token and Open Software Foundations. There is vaporware, dribbleware, betaware, other ware and who cares where. Users everywhere would appreciate it if vendors would look upon their wares as fine wine: Release none before its time. Otherwise, we end up with dribs of this, drabs of that and creaky postprototypes that don't have the gas to roll out of beta.

Why sic this stuff on users? Vendors who play this game seem to be unaware that they risk sullyng their reputations, irritating users and damning potentially decent products.

Take Intel Corp.'s I486 chip. Rumors of flaws and bugs — the stuff Intel likes to call "errata" — have abounded. Intel told me recently there were

Continued on page 118

Leasing firms in Blue shadow

BY NELL MARGOLIS
CW STAFF

Aggressive competition from IBM and its captive leasing company, IBM Credit Corp. (ICC), still ranks as the leading concern among members of the computer-leasing industry, according to the findings of the Computer Dealers and Lessors of America (CDLA) industry survey, released late last month.

According to analysts at Gartner Group, Inc. in Stamford, Conn., nothing in the evolving IBM/ICC relationship or in a potpourri of IBM leasing deals brewed up for customers' delectation in recent months is calculated to cause the Big Blue threat a near-term slip in the ratings.

However, Gartner Group

noted in its analysis of the CDLA findings that IBM is already beginning to run into a wall or two in the leasing area. That, combined with a new wave of leasing-industry stability triggered by the bankruptcy of leasing player Continental Information Systems, Inc. (CIS) early this year, could be hastening an already predicted shift from a lessees' to a lessors' market over the next several years, Gartner Group said.

Discount inferno

IBM discounting, a thorn in the side of lessors who find themselves unable to construct price-competitive deals and still make a profit, "appears to have become a way of life with IBM during 1989 as it strives to retain its

revenue targets," Gartner Group observed. Gross margins in the 45% to 70% range, Gartner Group said, allow it to do so. However, the firm further observed that the margins are merely wide, not infinite; constant discounting is likely to take its toll on IBM, which could have a hard time finding its way back to list prices.

The process, in fact, may already be taking place. Several analysts speculated that ever-deeper discounting was one of the factors that last month handed IBM third-quarter results that disappointed Wall Street and disconcerted smaller computer companies.

Similarly, Gartner Group noted an apparent strengthening of the IBM/ICC alliance, with a

Issues of concern

Out of the 10 top issues cited as important by leasing companies, 39% claim that they are keeping a close eye on IBM

IBM practices	39%
Captive aggressiveness ..	37%
Competition	34%
Financial stability	17%
Consolidation	17%
Slowdown of mainframe growth	16%
Shortened life cycle ...	15%
Tax laws	14%
Funds availability	11%
Economy	8%

Base of 92, multiple responses allowed

SOURCE: GARTNER GROUP, INC., CDLA CW CHART: JOHN YORK

lengthening list of bundled financial offerings and equipment ex-
Continued on page 119

Japan gathering strength for U.S. software assault

BY AMY CORTESE
CW STAFF

Many of the basic industries in the U.S. have felt pressure from Japan and other countries. Now Japan threatens to take the lead in software engineering, long considered a U.S. stronghold, according to many computer-aided software engineering (CASE) experts.

The Japanese reportedly are chipping away at U.S. software leadership with the same tools they applied to automobiles and consumer electronics: an em-

phasis on quality, employee involvement and training — and a lot of government support.

For instance, NEC, the Japanese computer manufacturer, sponsors a software-quality conference twice a year and invites its employees to submit papers. Last year, more than 1,000 technical papers were submitted.

"It demonstrates a passion for quality not seen in the U.S.," CASE consultant Ed Yourdon told an audience at the Showcase conference in St. Louis.

The Japanese, known for making the most of scarce re-

sources, have focused their attention on reusability. The average software development shop in Japan reuses 70% to 80% of its code, Yourdon said. Reusability is typically worked into the budget and project schedules up front, he said, with goals set for a specific level of reusability depending on the project. On the other hand, he added, their U.S. counterparts often have a vague notion of reusability.

After years in the making, IBM's repository is due this spring, promising a common place for corporations to store and manage software development information. Meanwhile, Japanese developers are exploring a more ambitious goal of establishing a nationwide repository of software objects and

reusable code, as part of the government-sponsored SIGMA project.

The project itself is a symbol of Japan's determination to master software. It is also an illustration of how that country plans for the future. The \$200 million project was undertaken after a government study in 1985 projected that there would be a shortage of programmers.

Jerry Evans at Butler Manufacturing in Kansas City, Mo., agreed that the way to view CASE is as a way to build a better quality product. He and other attendees at the conference expressed surprise at the extent of Japan's efforts. "You hear it said all the time," Evans noted, but to have it reinforced like that was a "revelation."

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After DEC U, on to grad school

BY NELL MARGOLIS
CW STAFF

CHELMSFORD, Mass. — To compete in the front ranks of a computer industry that is widely predicted to become even more competitive than it is today, Dig-

ital Equipment Corp. will have to develop a sales corps with the market savvy to go up against IBM on its own grounds and the technological clout to satisfy DEC's traditional scientific and engineering customers, several analysts recently observed.

Last summer, DEC mounted a reply to these observers and others similarly inclined: DEC U.

Late last month, the company rolled out its follow-up to the summer's experimental DEC University program, which saw some 6,000 DEC salespeople en-

rolled in intensive training sessions on the campus of Brown University.

Field-force frosh

DEC U was aimed at familiarizing the field sales force of the country's second largest computer company with the increasingly complex product lines it is charged with selling to increasingly sophisticated and demand-

ing users.

And now, grad school: Digital's Institute of Technology, a series of week-long training sessions intended to bolster the technical capabilities of DEC's sales support staff. About 200 "students" a week are now matriculating at a "campus" at a retrofitted computer-aided design and manufacturing (CAD/CAM) technical facility here.

More than 300 systems, including the just-debuted VAX 9000 mainframes, have been installed in the Institute of Technology lab to allow product managers and designers to conduct courses with a heavily interactive approach, said Pat Cataldo, DEC's vice-president for educational services. The CAD/CAM operation, Cataldo said, is working along uninterrupted; "the usual residents are getting a free lunch out of it," he said.

LATE LAST month, the company rolled out its follow-up to the summer's experimental DEC University program, which saw some 6,000 DEC salespeople enrolled in intensive training sessions.

What the Institute of Technology graduates are getting out of it, Cataldo said, is an unprecedented opportunity to master the technological aspects of the product lines they support, taught by the men and women who designed them. The company intends to graduate 2,000 from the mandatory, week-long sessions.

Satisfied student

Two weeks into the program, students appeared to be finding their time well spent. In anonymous written evaluations submitted to the company, an East Central area student wrote of a real-time configuration session: "I had expected only to glean an overview of Digital's capabilities in today's marketplace. The presenter far exceeded my expectations. The concepts for real-time evaluation will be extremely helpful for me in dealing with my customers in a commercial marketplace."

The teachers, too, are learning, Cataldo said. For many of them, the Institute of Technology affords their closest approach yet to actual customers and their needs.

The real final exam, of course, will be given in the marketplace. Meanwhile, Cataldo said, DEC is at work on a rollout schedule for a third track of training courses.

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IN BRIEF

A disk drive and a prayer?

Miniscribe Corp. last week rolled out the new disk-drive line on which it hopes to hang a comeback. However, a product debut may not be enough to pull the deeply troubled vendor out of its legal and financial morass.

According to the new balance sheet that followed the new drives out the door, the Longmont, Colo.-based company is currently worth minus \$88 million; Chief Executive Officer **Richard Rifenburg** said that continued losses are expected. Also, the company remains embroiled in shareholder suits.

Picky, picky

Alpha Microsystems will pay \$2.5 million to buy competitor/supplier **Fujitsu Microsystems of America**, purveyor of multitasking, multiuser microcomputers based on the Pick operating system.

The purchase price for the deal, according to the companies, will also include long-term OEM contracts between Fujitsu Microsystems, parent company Fujitsu America, Alpha Microsystems and its own recently purchased subsidiary, Rexon Business Machines.

Trouble?

The trouble with being in trouble in the first place is that it tends to get you into trouble in the second place, the president of one troubled computer vendor wryly observed last year.

One of the latest in a long string of computer firms to feel the truth of his observation is Sharebase Corp. (nee Britton Lee). The Los Gatos, Calif.-based database computer maker last week announced an approximately 25% reduction in its work force in an attempt to return the company to profitability.

Continuing losses, including a probable loss for the quarter ended Sept. 30, are largely the result of customer hesitancy caused by concern over Sharebase's financial condition, according to CEO John Cavalier.

Olivetti scrutinized on Cocom violations

BY RALPH BANCROFT
IDG NEWS SERVICE

ROME — Ing. C. Olivetti & Co. could be running into a confrontation with the U.S. administration over an Italian government report that suggests the computer company may have

breached guidelines drawn up by the Paris-based Coordinating Committee on Multilateral Export Controls (Cocom).

According to news reports, the study is thought to have concluded that while Olivetti has not exported any equipment to the Soviet Union in breach of the

regulations, work carried out by Olivetti technicians in the Soviet Union could well have upgraded hardware and software to a level in excess of the Cocom norms.

Concern in Washington, D.C., about Olivetti was the subject of a meeting here last week between Gianni De Michelis, the

Italian foreign minister, and Reginald Bartholomew, the U.S. undersecretary of state for security assistance, science and technology. At the end of the meeting, it was announced that both sides agreed on the need to maintain "an appropriate control on the exports of strategically important materials."

Olivetti denies it has breached Cocom guidelines.

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Keefe

FROM PAGE 115

only a few minor problems. Yet, on the eve of what is arguably Compaq Computer's most important announcement ever, Compaq was forced to reveal just the opposite.

This means that users anticipating first-quarter availability for I486 commercial products will probably have to wait until second quarter — maybe later. Anyone eager to snag an I486 must be pretty irked by this latest in a string of "hurry up and wait" scenarios. Of course, anyone waiting for open systems probably can stand a few product delays.

"Open" is a very subjective word. We desperately need a standard definition of what constitutes open and recognition that despite the hype, open anything does not necessarily solve compatibility problems.

Just look at the OSI model. There are seven layers, each with 20 or 30 choices. If IBM goes for all the B choices and DEC opts for A, users will still face linking problems. Many of

the "open" efforts relate back to various vendors wringing their hands over the success of craftier competitors.

How far would Unix have progressed by now if not for OSF, which slammed on the brakes at this extreme late date to anoint another Unix strain as its standard. This was not done in the spirit of openness but to better meet OSF vendor needs.

AT&T was doing a pretty good job of merging the various flavors of Unix before OSF came along. Curious that while IBM and Microsoft control DOS, this doesn't seem to have produced the kind of paranoia evidenced in the creation of OSF. And how much impact has OTF had on IBM's Token-Ring market share? Not much, I bet.

It is much too early to pass judgment on the Extended Industry Architecture Standard (EISA) group, which touts its adherence to open, industry standards. Some have lauded the Gang of Nine for forcing IBM to open up its Micro Channel Architecture, even just a teensy bit. However, users planning to buy I486 products next year now have to ponder whether to go

with EISA or MCA.

Then there are the "open" groups that spring up ostensibly to light a fire under sluggish standard-setting bodies. The most recent is the SQL Access Group, which may very well have a legitimate agenda. But there are already two other SQL

standards bodies. Do we need three? We're going to find out.

The fact is, no matter how "open" these guys get, they still think they get an edge from their proprietary protocols. And they probably do. Everyone needs distinguishing value-add. So forget open systems. Be-

fore you open your wallet, check out the product everywhere and make sure it interoperates with what you've got. In this sea of obfuscation, that's the best you can hope for.

Keefe is *Computerworld's* senior editor, PCs and workstations.

W. German IS industry slowing down

BY HELGA BIESEL
COMPUTERWOCHE

MUNICH — Among the high-fliers in the West German economy, the information and communications technology branch has been the top ace. But now it seems to be coming back in for a landing.

According to the Central Association for Electronic Technology and the Electronics Industry, a West German industry committee for information and communications technology, communications equipment recorded only a 3% growth in demand compared with a 1% decline in production demand. This lack of growth is largely because

of the country's facsimile boom, in which Japan has a nearly 100% market share.

In West Germany's information and communications branches, imports climbed 26.2% to \$6.2 billion (U.S.), with \$5.2 billion from computer hardware and \$949 million from communications technology. This was accompanied by a 3% slide to \$9.7 billion in domestic production. This recession is partly due to dropping prices in West Germany and the U.S.

West Germany's computer and communications export growth rate of 21% to a volume of \$4.9 billion was less than the 26.2% growth rate of imports. And the number of those em-

ployed in this branch also fell 2.5% to 209,000.

According to analysts, the reasons for the decline include ailing dynamics on the part of innovators, along with an allegedly saturated market.

Gerhard Adler, president of market researchers Diebold Deutschland GmbH, said growth is declining in part because data processing branches are expected to record 3% to 4% slower growth for the next few years.

Christian Schwarz-Schilling, West Germany's postal minister, said telecommunications equipment and services saw a 5% growth rate, but signs of saturation in the telephone services area are evident.

Wang trims down, raises \$200M in move back to black

BY PATRICIA KEEFE
CW STAFF

LOWELL, Mass. — Wang Laboratories, Inc. is inching slowly back to the black and shedding excess poundage in the bargain.

Attendees at Wang Laboratories' annual meeting were told two weeks ago that the embattled minicomputer maker has successfully raised over \$200 million through actual and pending sales of nonstrategic assets.

Wang President Richard Miller told the gathering that he expects to sell additional nonstrategic assets valued at \$200 million to \$300 million within the next six to nine months.

In all, Wang has identified \$800 million in nonstrategic assets, including Intecom Corp., Wang International Financials, Ltd., Wang Information Services Corp. and quite a bit of real estate, said Paul Henning, Wang's director of investor relations.

The combined proceeds from current and announced future asset sales, totaling \$400 million to \$500 million, will be used to reduce debt and related interest payments resulting from back-to-back catastrophic quarterly losses [CW, April 24 and Aug. 7].

"We have made significant progress in building a stable fiscal foundation to support our future operations," Miller said. "A few short months ago, there were those who would have written our corporate epitaph. Well,

I can tell you tonight that we are very much alive."

However, Miller did warn that if Wang is to maintain its independence and survive what he called an imminent industry shakeout — while also providing shareholders with an attractive return on investment — then every Wang division and employee "must embrace the principle that ... every product we design, every service we offer, must end and begin with customer as our paramount concern."

Further restructuring

Pending completion of a review of Wang's bloated cost structure, Miller put the company's thick layers of management on notice with two predictions.

"Our expenses will be reduced by over \$250 million annually and, more importantly, there will be an immediate and deliberate dismantling of the bureaucracy that devastates our bottom line, that stalls our productivity and inhibits the entrepreneurial genius which first won the confidence and trust of our customers."

Henning confirmed that "fairly soon" Wang will announce further organizational restructuring. Cuts of 2,500 are rumored.

In the last year, Wang's work force has shrunk by 5,000 positions through a combination of layoffs and attrition. It currently employs 25,000.

Following a whopping \$424.3

million loss in fiscal 1989, Wang took its first step down the road toward financial recovery in late August by reaching agreement with its banks to extend credit lines.

Shortly thereafter, Wang received \$175 million in working capital from CIT Hanover Mutual Trust. That amount is expected to fund Wang's operating needs for the next 18 to 24 months.

In the meantime, Wang has reached agreements to sell \$25 million worth of nonstrategic assets, while also inking agreements in principle to sell additional assets valued at more than \$175 million. These assets included the following:

- An agreement in principle to sell the domestic equipment lease portfolio of Wang and Wang Credit Corp. to a "major financial institution" for approximately \$150 million.
- Once completed, sale of a portion of Wang's interest in a European real estate subsidiary will net Wang \$37 million.
- The completed sale of Wang's manufacturing facilities in Stirling, Scotland, to Compaq Computer Corp. for \$13 million.
- Additional miscellaneous assets have been sold for approximately \$12 million.

Miller termed the announcement "good news for everybody interested in our return to financial good health." The asset sales will not affect customer service or financing or Wang's ability to innovate, he added.

Financial restructuring continues to be Wang's first priority, and Miller said intensive efforts continue to streamline the way

the company operates.

Miller also addressed three other key concerns: customer service, sustainable profitability and employee communications.

"These four objectives are the cornerstone of our transition, the foundation upon which we will restore stability and growth," he said.

Stardent merger complete; home base and CEO named

BY NELL MARGOLIS
CW STAFF

NEWTON, Mass. — Ardent Computer Corp. and Stellar Computer, Inc., the graphics supercomputer archrivals who in August decided, "If you can't beat 'em, join 'em," last week announced that their merger and new incarnation as Stardent Computer, Inc. went into effect on Oct. 24.

With a green light from shareholders and government regulatory agencies, Stardent ended weeks of speculation as to who will do what, and where, at the executive level.

Veteran computer industry entrepreneur and former Stellar head J. William Poduska will serve as Stardent's president and chief executive officer. Veteran computer industry entrepreneur and former Ardent head Allen H. Michels will serve as chairman, focusing on far-reaching strategy.

Stardent will be headquartered in Newton, Mass., former Stellar central site, with an approximately equivalent operation at the former Ardent home base in Sunnyvale, Calif.

"There's no question but that the merger is a good deal in the near term," said Agit Kapoor, an analyst at BIS CAP International, Inc. in Norwell, Mass. However, he said, as general-purpose workstations take on more and more millions of instructions per second, triumph in the graphics supercomputer niche could end up a moot point. Unless Stardent uses its joint clout to move beyond the market it is

clearly poised to dominate, Kapoor said, "their assets could become their liabilities."

According to Robert Trier, director of technical programs at the Research Consortium, Inc. in Minneapolis, plans for just such a move are already under way at Stardent.



Poduska will be Stardent's president and CEO

Leasing

FROM PAGE 115

change possibilities. However, a Gartner Group poll of 400 major IBM users earlier this fall showed relatively few takers for ICC's more sophisticated new leasing options.

Gartner Group speculated that users are willing to forego the "flexibility" of ICC's new deals in favor of the flexibility of multivendor dealings, used equipment alternatives and the customized contracts still more prevalent among independent lessors.

ICC's share of the overall equipment financing market for the first six months of 1989, according to Gartner Group figures, grew dramatically: up 43% over last year's first half for financing to independent remarketers and end users and up 68% for direct end-user financing alone.

And the winner is...

However, Gartner Group said, "we believe that ICC has won the majority of its 1989 deals primarily on price. . . . Continuance of such competitive bids depends on parent strategy and the financial trends of ICC." IBM earmarked an unexpected customer surge to leasing as one of the prime factors behind its disappointing third-quarter earnings, a possible indicator that parent strategy is at least open to question.

NICKELS & DIMES

Systematics, Inc. reported \$53.7 million in revenue for its first quarter ended Aug. 31, an increase of 14.1% over revenue of \$47.1 million in the first quarter last year. Net income was \$4.3 million, compared with \$3.7 million in the first quarter a year ago, an increase of 16.5%.

Micron Technology, Inc. reported revenue of \$446.4 million and net income of \$106.1 million for fiscal year 1989, which ended Aug. 31. These figures compare with revenue of \$300.5 million and net income of \$98 million for fiscal year 1988. Revenue for the fourth-quarter fiscal year 1989 was \$103 million, and net income was \$16 million, down from revenue of \$113.4 million and net income of \$43.3 million for the fourth quarter of fiscal year 1988.

Alpha Microsystems reported net income for the second quarter ended Aug. 27 of \$113,000 on net sales of \$13.1 million. The organization reported a profit of \$605,000 on net sales of \$12.7 million for the like period a year ago.

"The trend towards operating leases and away from capital leases is significant," Gartner Group said. Capital leases can be booked as sales for accounting purposes; operating leases cannot. "The question remains how long IBM will be able to tolerate the concurrent decrease in its revenue."

In addition to possible curbs on the ICC incursion, Gartner

Group also pointed to last January's bankruptcy of CIS — particularly when seen in the context of the financial instability of many smaller independent lessors — as a cloud with a distinctly argentine lining. The consequent user "flight to safety," Gartner Group reasoned, will focus emphasis on the "overall lessor relationship" rather than on a single factor such as price. This

shift will in turn promote stability within the leasing community, at least in the long term.

Value-added services, estimated by Gartner Group as an approximate 8% contributor to the revenue of major lessors in 1989, are expected to show up as 30% to 35% of revenue for the same companies by 1994. "Services will include disaster recovery [and] some level of sys-

tems integration and maintenance," according to Gartner Group projections. "The more creative lessors will branch out into true portfolio management for users, including acquisition alternative strategies, asset tracking and administration and disposition or remarketing. The largest lessors and captives might entertain facilities management."

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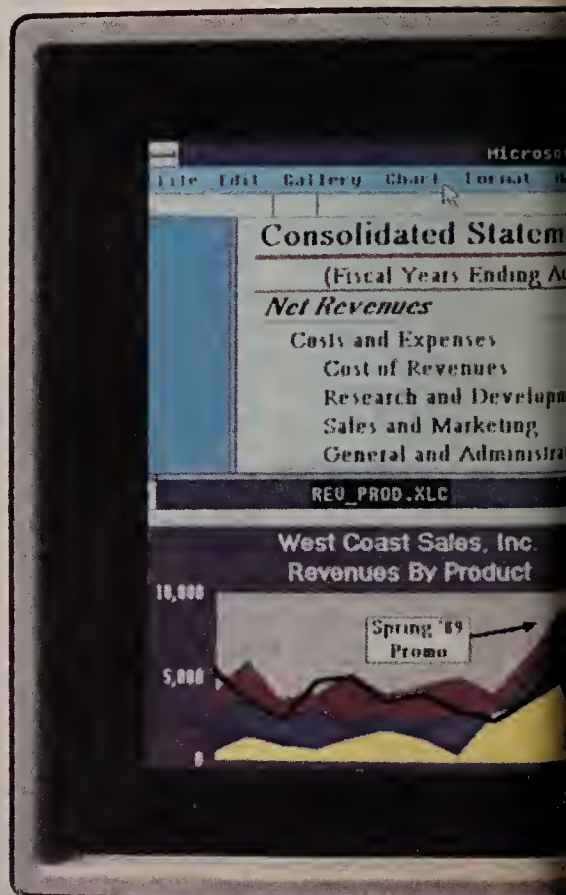
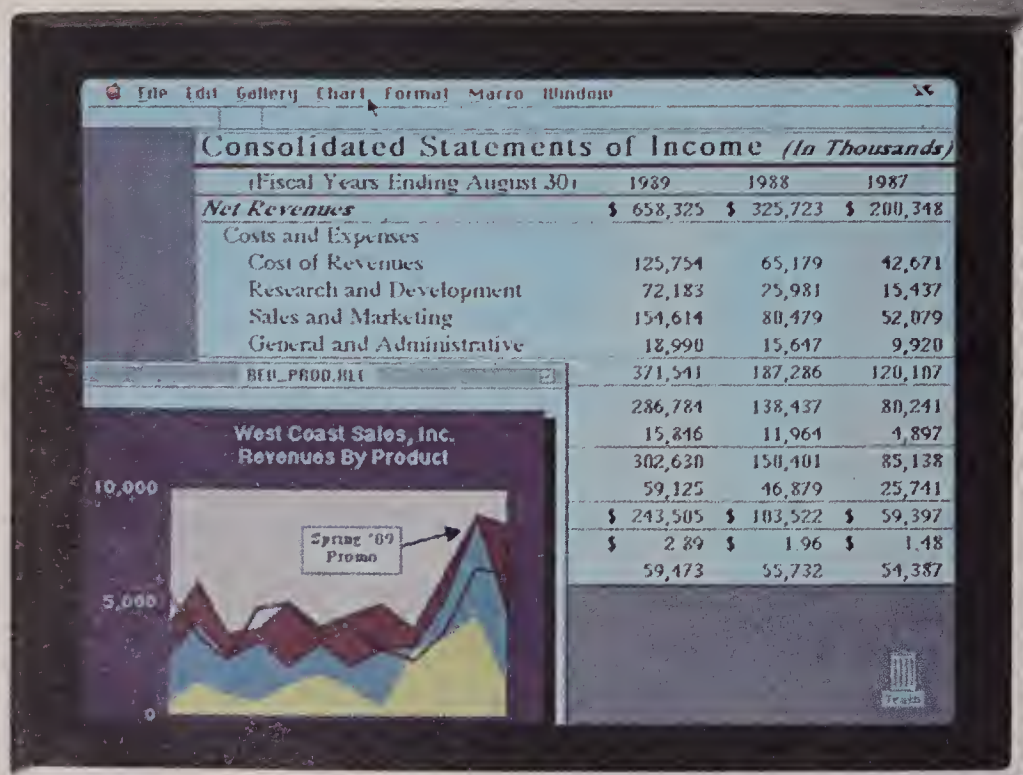


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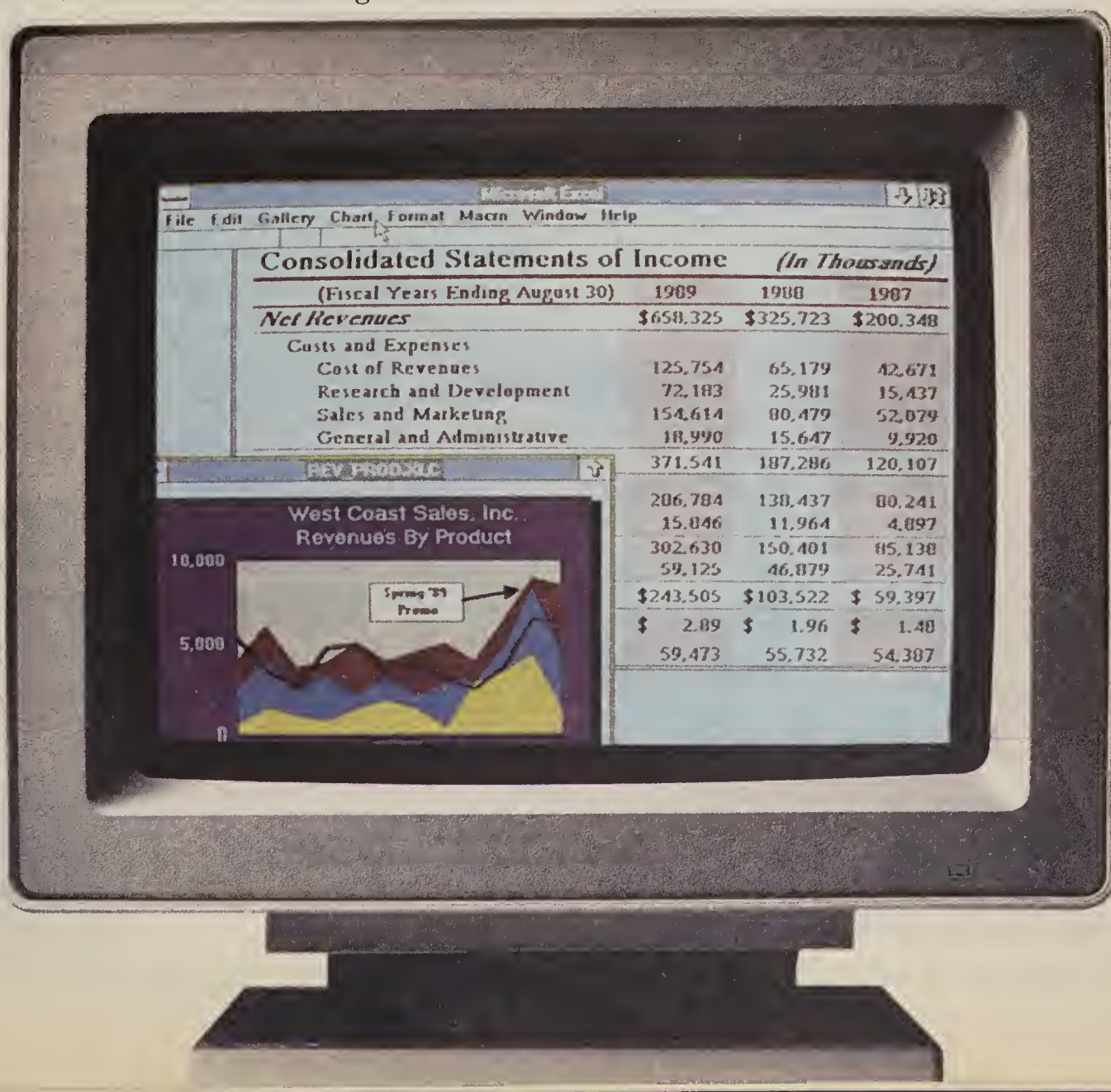
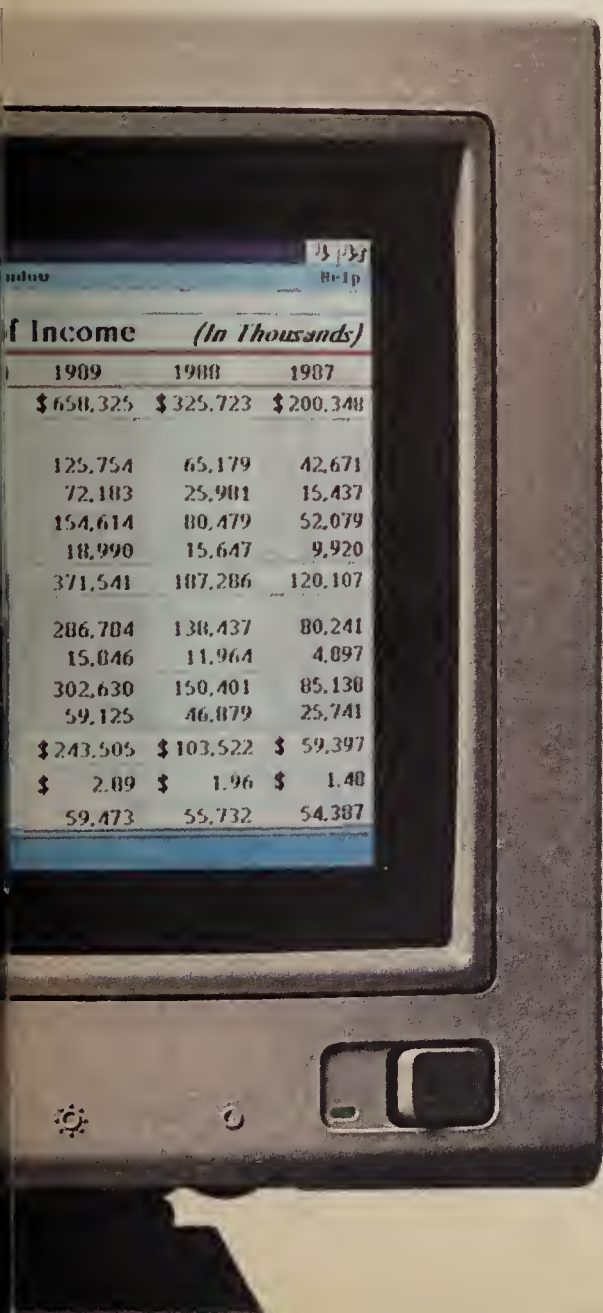
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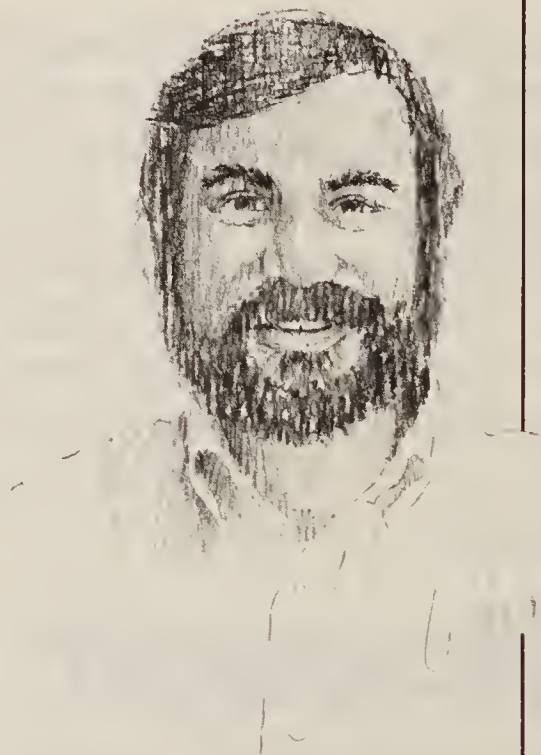
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Selecting a good headhunter

Assure yourself that a recruiter is a competent specialist before choosing

BY JANET RUHL
SPECIAL TO CW

Calling a headhunter can be the fastest and easiest way of finding a satisfying new job — if the headhunter you call is the real thing. However, most recruiters who place information systems professionals work on commission, earning a percentage of the recruit's annual salary. With these fees running to \$10,000 or more, the field has attracted some unqualified individuals. It is therefore essential that you determine the caliber of a headhunter before agreeing to work with one. Getting involved with an incompetent or unethical recruiter can not only waste your time, but it can also prevent you from being considered for a job you should be able to get or alert your current boss that you are thinking of leaving.

How, then, do you select a capable headhunter?

First of all, you need to determine whether a recruiter specializes in placement of IS professionals. In most urban areas with significant numbers of IS jobs, the most effective headhunters tend to be the ones who limit themselves to that field. However, just because a company claims to specialize in IS placement does not mean that it really

does so. When evaluating advertisements, eliminate any company that solicits "Cobalt programmers" or people with experience in "DB too." Such solecisms are usually a clear sign that a company is not used to dealing with computer professionals. Be leery, too, of dealing with firms that run ads claiming they are technical recruiters side-by-side with other ads seeking secretarial personnel and temporary laborers.

Once you have answered an ad and come in for an interview, inspect any application form that you are given to fill out. Be suspicious of companies whose standard form asks you how many words per minute you can type or what kinds of office machinery you can operate. You should not be asked for credit information; such inquiries suggest that the firm specializes in bonded workers.

Do not deal with any firm that makes you sign a contract obliging you to pay a fee, including an amount you must pay if you do not remain in a job for a specified period. Reputable IS placement firms never charge fees to the people they place. The quality of

the job they find for you should be such that you do not want to leave it after three months.

When you meet with a recruiter, do not forget to ask about his own background. In the best firms, recruiters have usually spent time working as programmers, consultants or IS managers. This gives them the ability to understand and evaluate the credentials of applicants for IS jobs. People with such backgrounds are also more likely to have built up personal contacts with the people who do the hiring in local companies. Be suspicious of a recruiter who is vague about his background or whose background is in a sales area unrelated to programming.

Perhaps the best test of a headhunter is to find out what they already know about your current employer and workplace before letting them pump you for information. Since headhunters' effectiveness in finding you a new job is in direct proportion to their awareness of what is going on in local IS organizations, you should expect them to know some of the people in your current management chain and to be

aware of the major projects in your division. This is particularly true if you work for a large company.

You should expect to explain the details of what you do and to define your skills, but be suspicious of interviewers who seem to be pumping you for names of managers associated with new development projects or of people with particular skills in your current company. The focus of the interview should be on determining what kinds of skills and experience you have, not on giving the recruiter more prospects. You should expect to give references, but your suspicions should be raised if the interviewer demands long lists of phone numbers for managers and professionals.

Once you have provided the headhunter with a good sense of your background and skills, see what kinds of jobs he or she suggests can be found for you. The reality of the placement business is that companies pay the recruiters a hefty fee to get employees who do not require expensive, time-consuming training. This means that it is unlikely that a headhunter will be able to place you in a job that does not feature the same general type of software and systems that you work with at your current job. It is also very unlikely that a headhunter will be able to get you a job at a level in the company hierarchy much higher than the one you currently occupy. If your goal in changing jobs is to get exposure to new technology or to

move into management, an ethical recruiter should acknowledge that achieving such goals is difficult to do by changing jobs and may be easier to accomplish by staying with your current company.

Although you should expect a new job to bring with it a greater salary than your current one, be suspicious of headhunters who pitch salary alone as the reason for taking a new job. This kind of focus is often the sign that a would-be IS recruiter does not know enough about IS jobs to describe other potential benefits.

Look carefully at the interviews that headhunters offer to set up to see if they truly understand your skill level and the kind of job you are looking for. Interviews take time and usually mean missing work, so when the recruiter calls, try to screen jobs over the phone in order to avoid wasting time going to interviews for positions you would not want or are not qualified to take.

Finally, if you are uncertain about whether to accept a new position, do not rely on the headhunter for help in making the decision. Headhunters are not career counselors but salespeople, paid only when you take a job. Let them use their powers of persuasion to convince employers to give you an interview, not to encourage you to take a job you really do not want.

Ruhl is a consultant programmer in Connecticut and author of *The Programmer's Survival Guide: Career Strategies for Computer Professionals*.



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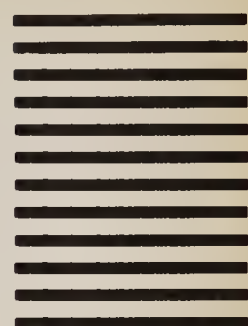
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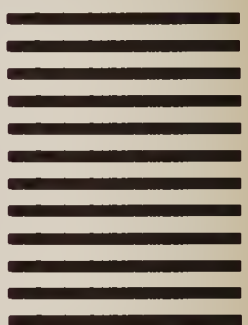
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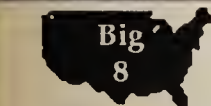
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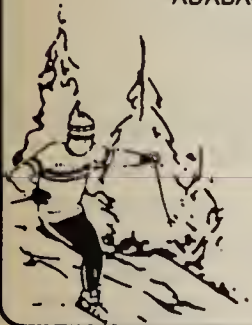
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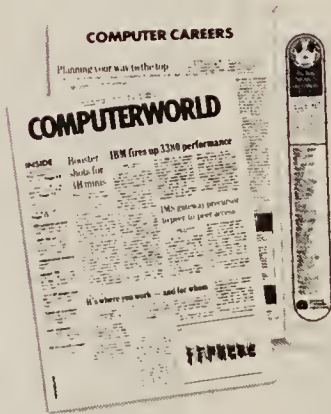
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Large oil and gas company seeks individual with strong DB2 data base administration background. PL/I or COBOL is required. TSO/ISPF and IMS DB/DC would be desirable. Salary negotiable. Fee paid.

LIVE ON THE COAST

Gulf Coast firm has urgent need for programmer analyst. This individual will interface with all levels of users. PL/I & VM/CMS required. Company has exceptional benefits & will relocate. Salary to \$35,000.

SR CONSULTANT

Client has urgent need for several analysts. Degree a must along w/COBOL, CICS, DB2, TELON and/or MSA. Career path to mgmt. available. To \$45,000. FEE PD.

ROBERT HALF
1360 Post Oak Blvd.
Houston, Texas 77056
800-356-1994

SYSTEMS ANALYST - To provide systems analysis, programming support and advice on data planning and program requirements. Special Requirements: Experience with IMS DB/DC, MFS, BTS, DL/I Database Organizations and database access methods; professional information systems programming experience; developing batch and on-line database applications in an IBM COBOL mainframe environment; in-depth knowledge of MVS/XA, VAX/VMS, MS-DOS, UNIX/C and TSO/ISPF. Proficiency in JCL, JES2, JES3, Utilities and Systems Software Products. In-depth understanding of VSAM file management and architecture; experience with system design, analysis and implementation of highly interactive database applications using Local Area Network (DECnet), fourth-generation languages (INFORMIX, 4GL, Application Management Language) and relational database management technology (INFORMIX-SQL, INGRES). Applicant should have B.S. in either Computer Science, Electronics and Communications Engineering or Electrical Engineering. One year experience in the position or one year experience as a Computer Programmer. Hours are 8:00am to 5:00pm, Monday through Friday, 40 hours per week at \$27,456.00 per annum salary plus overtime as necessary at \$19.80 per hour. Please respond to Job Service of Florida, Division of Labor, Employment and Training, 3421 Lawton Rd., Orlando FL 32803, Job Order #FL0185842

SALES REPRESENTATIVES

Immediate openings for Sales Reps with a minimum of 2 yrs DP sales experience for a NY, NJ, CT, PA, DC DP consulting group. Requires bright, aggressive individuals with good telecommunication and one-on-one sales skills to market DP consulting services to Fortune 500 companies. We offer a competitive compensation package including salary, commissions and benefits.

Send resumes including salary history in confidence to or call:

LANCASTER SYSTEMS, INC.

Mr. Daniels
1600 Harrison Ave.
Mamaroneck, NY 10543-3134
(914) 698-6869
FAX (914) 698-5556

Scientific/ Academic Programmer/ Analyst

Work with internationally known professor/researcher in marketing and psychometrics. Develop and use multidimensional scaling and related techniques of data analysis. Use and maintain graphical UNIX workstation integrated with Ethernet. Use and develop statistical and data analytic software to fit complex nonlinear models to behavioral science data.

Requires master's degree in computer science, mathematics, statistics or equivalent. Five years experience as scientific programmer. Interpersonal skills with diverse groups.

Annual salary up to \$55,000 for two years with possible extension. Nonbenefits position.

Resumes to:

Janet M. Davis
Associate Dean
Rutgers Graduate School
of Management
92 New Street
Newark, New Jersey 07102

EEO/AA Employer

DATA TELECOMMUNICATIONS SUPERVISOR

(Baltimore, Maryland)

USF&G is one of the nation's largest and most diversified insurance and financial services companies. Our technical professionals work with some of the most advanced computer and data processing technologies available. If you'd like to explore another career option, consider USF&G. We're seeking a Data Telecommunications Supervisor for our state-of-the-art Data Processing Center located in our Mt. Washington facility, just 20 minutes from downtown Baltimore, Maryland and the Inner Harbor.

If selected you will administer, direct, and supervise the Data Telecommunications Unit in support of USF&G's business activities, applications, and projects. You will also plan and implement the activities and assigned projects, manage and direct the unit's staff, prepare the annual budget and business plan and recommend telecommunications hardware and systems purchases for the Data Processing Department.

Requirements include four years experience in a telecommunications environment and thorough knowledge of common carrier network offerings, data networks, data network design theory and practice, available network design software tools, KU band satellite and T1 technologies, telecommunications related office automation systems, data communications hardware functions, and SNA/SDLC. Experience implementing and supporting large data network is also required.

Positions are also available for experienced Telecommunications Analysts.

USF&G offers competitive salaries and comprehensive benefits like relocation assistance, free group life insurance, choice of medical plans, dental, tuition reimbursement, use of recreation facility, savings & investment and stock purchase plans. For immediate consideration, please send your resume with salary history to: USF&G Insurance, Attn: Phil Ostrander, Code 89257, 5801 Smith Ave., Baltimore, MD 21209. For information on other job opportunities currently available, please call the USF&G Job Line at (301) 625-5500.

An equal opportunity employer M/F.



Director of Computing and Information Systems

Ramapo College seeks an experienced person to fill the position of Director of Computing and Information Systems. The position requires a college degree, preferably graduate training; the ability to direct the delivery of academic and administrative computing services throughout the campus; thorough knowledge of computers and information technology, and successful technical and managerial experience. Start date for position is flexible.

Ramapo College is a four-year, undergraduate college of liberal arts, sciences, and professional studies with an enrollment of 4,000 students. Computer facilities include DEC 6320 (VMS), DEC 8600 (Ultrinsic-32), Broadband Ethernet, and 200+ IBM PC/PS2 microcomputers, some networked.

Please send letter of application (indicating position #328), resume, and names of three references to Tim Robinson, Chairperson, Search Committee for Director of Computing and Information Systems, Ramapo College, 505 Ramapo Valley Road, Mahwah, N.J. 07430. Applications will be reviewed beginning November 27, 1989.

RAMAPO COLLEGE



Ramapo College is an Equal Opportunity, Affirmative Action Employer and enthusiastically encourages applications from women, minority and disabled candidates.

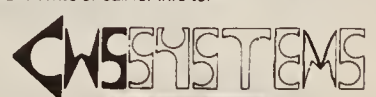
RESEARCH TRIANGLE OPPORTUNITIES

Currently recruiting experienced computer pros with background in any of the following: IBM COBOL MAINFRAME APPLICATIONS; CICS; IDMS; IMS; ADS/O; ORACLE; DB 2; UNIX; SAS; S/38 RPGIII or COBOL; AS400; DEC/VAX COBOL or FORTRAN; PICK O/S; Financial; Mfg.; Health Care; Banking; Insurance; MVS, VM, NCP/VTAM or CICS Systems Progs; DEC/VAX Systems Mgrs; RACF; CPCS; Adabas Internals; PC LAN; Database Analysts; Office Automation. Partial listing of local, regional & nat'l fee paid positions. Call or write:

The Underwood Group, Inc.
3924 Browning Pl., Suite 7
Raleigh, NC 27609
(919) 782-3024

ATTENTION: INDEPENDENT AND EX-INDEPENDENT CONSULTANTS

PROTECT/RESTORE your independence, own a CONSULTING FRANCHISE. Benefit from nationwide client search and advertising, group health and liability insurance, special training, CASE software, talent pools, Computer Intelligence Database. BE A TRUE CAPITALIST. Write or call for info to:



P.O. Box 10444
Atlanta, GA 30319
Ph. 1-800-752-8296

It's easy to place your recruitment ad in Computerworld!

All the information you need is right here. Just call Lisa McGrath at 800-343-6474 (in MA, 508-879-0700). Or, if you want, you can send us the form below via mail or to our FAX machine. You can reach our FAX at ext. 739 or 740 at either of the above numbers.

The following information will help you determine the size ad you'd like to run and when you'd like to run it.

CLOSING DATES: To reserve space, you need to call us by 5PM (all continental U.S. time zones), 6 days prior to the Monday issue date. We need your ad materials (camera-ready mechanical or copy for pub-set ad) by 5PM, 5 days prior to the weekly issue.

AD COPY: We'll typeset your ad at no extra charge. You can give us copy via phone, U.S. mail, or FAX. To typeset an ad for you, we need clean, typewritten copy. Figure about 30 words to the column inch, not including headlines. (There are seven columns on each page.)

LOGOS AND SPECIAL ARTWORK: Any logos or special artwork should be enclosed with your ad copy. For best reproduction, please send us either a stat of your logo or a clean sample on white bond paper.

COLUMN WIDTHS AND MINIMUM DEPTHS: Your ad can be one of seven different widths. There is a minimum depth requirement for each width. You can also run larger ads in half-inch increments. The chart below can serve as a reference.

NUMBER OF COLUMNS	WIDTH	MINIMUM DEPTH
1 column	1-1/4"	2"
2 columns	2-5/8"	2"
3 columns	4-1/16"	3"
4 columns	5-9/16"	4"
5 columns	6-15/16"	5"
6 columns	8-3/8"	6"
7 columns	9-3/4"	7"

RATES: Your rate will depend on the size of your ad and whether you choose to run regionally or nationally. The national rate is \$13.50 per line or \$189.00 per column inch. The regional rate (Eastern, Midwestern or Western editions) is \$9.00 per line or \$126.00 per column inch. You can run your ad in any two regions for \$11.60 per

line or \$162.40 per column inch. In all cases, you can earn volume discounts.

The minimum ad size is two column inches (1-1/4" wide by 2" deep) and costs \$378.00 if run nationally. A sample of this size appears below. You can run larger ads in half-inch increments at \$94.50 per half inch. Box numbers are available and cost \$25 per insertion (\$50 if foreign).

Programmer Analyst

This is a sample ad for Computerworld's Computer Careers section. It will help you decide what size ad you'd like to run. Remember that you can run your ad either regionally or nationally in our recruitment section and that the minimum ad size is one column (1-4/16 inches wide) by two inches deep (like this sample). This ad would cost \$378.00 in our national edition, \$252.00 in the Eastern, Midwestern, or Western edition, and \$324.80 in two regions; volume discounts apply.

SAMPLE AD SIZES AND PRICES: To assist you in planning your recruitment advertising, the following shows common ad sizes and their respective costs.

	One Region (East, Midwest or West)	Two Regions (East/West East/Midwest, Midwest/West)	National Edition
1 column x 2"	\$ 252.00	\$ 324.80	\$ 378.00
2 columns x 2"	\$ 504.00	\$ 649.60	\$ 756.00
3 columns x 3"	\$1,134.00	\$1,461.60	\$1,701.00
4 columns x 5"	\$2,520.00	\$3,248.00	\$3,780.00
5 columns x 7"	\$4,410.00	\$5,684.00	\$6,615.00

PAYMENT: If you're a first-time advertiser or if you haven't established an account with us, we need your payment in advance (or with your ad) or a purchase order number. Once you have established an account with us, we'll bill you for any ads you run as long as your payment record is good.

COMPUTER CAREERS NETWORK BUYS: You can take advantage of special rates that let you run your ad in *Computerworld* and *Computerworld's* sister newspapers at special rates. Choose from *Computerworld Focus on Integration*, *Network World*, *InfoWorld*, *Digital News and Federal Computer Week*. Call for details.

Computerworld Recruitment Advertising Order Form

Ad Size: _____ columns wide by _____ inches deep

Issue Date(s): _____

Name: _____

Company: _____

Address: _____

Telephone: _____

Region: ☐ East ☐ Midwest ☐ West **National:** ☐
☐ East/Midwest ☐ Midwest/West ☐ East/West

Send this form to: **COMPUTERWORLD RECRUITMENT ADVERTISING**
375 Cochituate Road, Box 9171, Framingham, MA 01701-9171
800-343-6474 (In MA, 508-879-0700)
Telecopier Extensions: 739



Computer Professionals: Some people became famous because of their great many abilities.

It's doubtful that any of our NCA consultants will ever become historically famous. Nevertheless, they all possess a great many abilities that are absolutely essential to providing computer career advancement.

They must: be technologically current in rapidly-changing computer developments...be able to maintain close and confidential relationships with hundreds of employers...be able to provide accurately detailed information on hundreds of computer career opportunities, locally and nationally...be able to merit the confidence of all candidates...be able to represent them professionally and to negotiate diplomatically. With these abilities, and more, they can assure you that: "All little strokes fell great oaks."

Come in. Call. Or mail your resume to the NCA firm nearest to you. No charge to you ever. Confidentiality is assured. Act today! Because as the man said: "Time is money."



**National
Computer
Associates**

ATLANTA: DataPro Personnel Consultants
400 Perimeter Center Terrace, Suite 650
Atlanta, GA 30346 (404) 392-4242
BALTIMORE: CIPS Inc
101 W. Ridgely Road, Suite 7A & 8A
Lutherville, MD 21093 (301) 252-9000
BOSTON: Robert Kleven & Co., Inc.
P.O. Box 636
Lexington, MA 02173 (617) 861-1020
CHICAGO: Thomas Hirtz & Associates
150 North Wacker Drive, Suite 1700
Chicago, IL 60606 (312) 977-1555
CINCINNATI: Task Group
7875 Reading Road
Cincinnati, OH 45237 (513) 821-8275
CLEVELAND: Innovative Resources Inc.
Stallier Office Tower, Suite 426
East 12th & Euclid
Cleveland, OH 44115 (216) 621-4220
COLUMBUS: Michael Thomas, Inc.
450 W. Wilson Bridge Road, Suite 340
Worthington, OH 43085 (614) 846-0926
DALLAS: DataPro Personnel Consultants Inc.
13355 Noel Road, Suite 2001
Dallas, TX 75240 (214) 661-8600
DENVER: Abacus Consultants Inc.
1777 South Harrison Street, Suite 404
Denver, CO 80210 (303) 759-5064
DETROIT: Electronic Systems Personnel
3000 Town Center, Suite 2580
Southfield, MI 48075 (313) 353-5580
GREENSBORO: DataMasters
P.O. Box 14548
Greensboro, NC 27415-4548
(919) 373-1461
HARTFORD: Compass Inc.
875 Asylum Avenue
Hartford, CT 06105 (203) 549-4240
HOUSTON: Career Consultants, Inc.
1980 Post Oak Boulevard, Suite 1050
Houston, TX 77056 (713) 626-4100
KANSAS CITY: DP Career Associates
6405 Metcalf, Suite 502
Shawnee Mission, KS 66202 (913) 236-8288
LOS ANGELES: Superior Resources Inc.
22653 Pacific Coast Highway, Suite 1-106
Malibu, CA 90265 (818) 884-3000
MIAMI: Data Sciences Personnel Inc.
P.O. Box 8577
Hollywood, FL 33024 (305) 434-6112
MILWAUKEE: EDP Consultants Inc.
Chancellor Park II, Suite 350
350 N. Sunnyslope Road
Brookfield, WI 53005 (414) 797-8855
MINNPLS. ST. PAUL: Electronic Systems Personnel
880 International Centre
900 2nd Avenue South
Minneapolis, MN 55402 (612) 338-6714
NEW JERSEY: Systems Search
2040 Milburn Avenue
Maplewood, NJ 07040 (201) 761-4400
NEW YORK: Botal Associates Inc.
7 Dey Street, Suite 410
New York, NY 10007 (212) 227-7370
PHILADELPHIA: Systems Personnel Inc.
115 West State Street
Media, PA 19063 (215) 565-8880
PHOENIX: Professional Career Consultants
4725 North Scottsdale Road, Suite 209
Scottsdale, AZ 85251 (602) 274-6666
PITTSBURGH: KCS Computer Services Inc.
400 Penn Center Blvd., Suite 320
Monroeville, PA 15125 (412) 823-8632
ROCHESTER: Traylor Confidential Ltd.
10 Gibbs Street, Suite 400
Rochester, NY 14604 (716) 325-6610
SAN DIEGO: Technical Directions Inc.
5005 Texas Street, Suite 304
San Diego, CA 92108 (619) 297-5611
SAN FRANCISCO: The Computer Resources
Group Inc.
303 Sacramento Street
San Francisco, CA 94111 (415) 398-3535
SEATTLE: Houser Martin Morris & Associates
110 110th Avenue N.E., C-90015
Bellevue, WA 98009 (206) 453-2700
STAMFORD: Higg Waters Professional Recruiting
707 Summer Street
Stamford, CT 06901 (203) 357-8400
ST. LOUIS: Executive Career Consultants
795 Office Parkway, Suite 100-CW
St. Louis, MO 63141 (314) 994-3737
SYRACUSE: CFA Associates Personnel Inc.
5790 Widewater Parkway
Dewitt, NY 13214 (315) 446-8492
WASHINGTON DC: Bill Young & Associates
8322 Professional Hill Drive
Fairfax, VA 22031 (703) 573-0200
AUSTRALIA: For information contact the
NCA firm nearest to you

SYSTEMS PROFESSIONALS

Our move to Virginia is creating systems opportunities you won't want to miss!

Mobil, one of the world's preeminent energy companies, prides itself on growing its own talent. However, with the relocation of our Sales & Supply Division to Fairfax, Virginia, exceptional opportunities have been created for experienced:

Project Leaders Systems Analysts Programmer Analysts Business Analysts

To qualify, you'll need a B.S. degree and 3+ years' experience in one or more of the following: DB2, IMS, FOCUS, or COBOL (using embedded SQL).

Our development environment makes extensive use of the Information Engineering Methodology, supporting CASE tools, PC-to-mainframe connectivity, cooperative processing and expert systems.

Mobil's stimulating environment encourages its people to be enterprising and to take risks. If you are a hard working self-starter, possess the technical expertise and the interpersonal and communication skills that will help foster strong working relationships, Mobil would like to consider you for these opportunities.

Call TOLL FREE, 800-848-3683, 24 hours/day, 7 days/week. Or send your resume to: Mobil Oil Sales & Supply Division, Dept. CW, 10310 Main Street, Suite #240, Fairfax, VA 22030. We appreciate your interest in Mobil Oil, but can only respond to those candidates who meet the above requirements.

We are an Equal Opportunity Employer. We encourage women, minorities, the handicapped and veterans to apply.

Mobil

Associate Software Engineer: Design, coding, integration, and testing of software for several modules of a support basis for other systems such as User Interface and Prototyping. Perform work from high level architecture, design, interface specifications. Utilize SUN workstations, UNIX operating system, C and Ada languages, and object-oriented extensions to those languages. Requirements are a B.S. or B.A. in Computer Science. Must have successfully completed coursework in the following areas: software engineering techniques and methods appropriate to modern programming languages; object oriented databases. Hours are 8:00 a.m. to 5:00 p.m., 40 hours per week. Salary is \$29,000 per year. Apply at the Texas Employment Commission, Austin, Texas, or send resume to the Texas Employment Commission, TEC Building, Austin, Texas 78778, Job Order #5517620. Ad paid for by an Equal Employment Opportunity Employer.

★ GET OUT ★ OF TOWN NATIONWIDE OPPORTUNITIES

YOUR HOME TOWN MAY HAVE MANY JOBS, BUT NOT YOUR CAREER OPPORTUNITY. THE COMPUTER-TECH NETWORK OF 60 NATIONAL COMPUTER SEARCH AGENCIES SPECIALIZES IN THE PLACEMENT AND PAID RELOCATION OF COMPUTER PERSONNEL TO ALL AREAS OF THE U.S.A., (216) 356-9990
FAX (216) 356-9991
TOLL-FREE 1-800-752-3674
COMPUTER TECH NETWORK
21010 Center Ridge Rd.
Rocky River, Ohio 44116

PROGRAMMER/ANALYST
(6 Temporary Positions Available from 1/1/90 to 1/1/91.) Support the development of computerized General Ledger Accounting System. Require 3 years experience. Experience must include knowledge and proficiency with Honeywell DPS6/8, GCOS, COBOL and DMIV/TP. Salary: \$28,500 per annum. Hours per week 40. Job Location and Interviews: Euro Systems International, 4022 Sells Drive, Hermitage, Tennessee. Resume to: Don McCarthy, 305 Madison Avenue, Suite 1112, New York, NY 10165.

RSVP SERVICES

ANALYSTS, PROGRAMMERS, DESIGNERS

If You Have The Right Stuff . . .

2 years minimum professional experience, stable work history, good technical references, U.S. citizenship or green card, and competence in at least one of the following

• UNIX/C • VAX/VMS • IBM MVS • AS/400
• System/38 • Tandem • Ada • RPG III • DB2
• SOL • IDMS-ADS/O • IMS • CICS • ORACLE
• INFORMIX • SYBASE • PACBASE • FOCUS
• INGRES • ADABAS • SNA • VTAM • M&D • MSA
• MAPICS

• Communications • Networking • Operating Systems
• Compilers • Controls • Parallel Processing
• Distributed Systems • Object Oriented Programming
• Windowing • DB Development OR Administration
• SQA/IV&V OR CM • ASW/Sonar • Radar
• Supercomputing • CASE • Expert Systems
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. . . We Have the Right Service

Thousands of placements of computer professionals since 1966, over 1000 client companies and 200 affiliates nationwide, resume preparation and selective distribution, no cost or obligation to you, no sales pressure.

TO APPLY: Mail or FAX resume or call Howard Levin.

RSVP SERVICES

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800-222-0153 or FAX: 609-667-2606 [refer to Dept. C]



DARTMOUTH COLLEGE Director of DMS Computing

Directs all aspects of computing at the Dartmouth Medical School. As such, assesses needs and oversees the design, implementation, and management of fiscal, administrative, academic and research information systems. Demonstrated ability to conceptualize, design and implement integrated information systems. Capable of interfacing with high level administrators from a multi-institutional medical center. Excellent managerial skills, Master's degree in Business or Computer Science with 0-6 years of experience in system's management, preferably in a health care or academic setting, or the equivalent. Resumes will be reviewed starting November 15 and should be sent to Mark Helijas, Dartmouth Medical School, Hanover, New Hampshire 03756.

Dartmouth College is an Affirmative Action Equal Opportunity Employer. Women and Minorities are encouraged to apply.

ANALYSTS - New development project, high visibility, 3+ yrs in an IBM MVS shop, COBOL, any data base experience a plus. Salaries to low 40's.

P/A's - Multiple slots with one of the industry leaders, requires experience with COBOL in an IBM MVS shop, CICS, IDMS, financial or food processing experience are pluses. Salaries range from high 20's to high 40's.

P/A's - IMS is the key for slots with a diversified company IBM MVS shop, financial/human resource applications, BS required, salaries to mid 30's.

Consider Omaha, rated the 37th best place to live in a survey of 329 metro areas in the U.S.

All of the above positions include relocation package. Consider Omaha, rated the 37th best place to live in a survey of 329 metro communities in the U.S.

ROBERT HALF
DATA PROCESSING
7171 Mercy Rd #302
Omaha, NE 68106
(402) 397-8107

CA & AZ CONTRACTS

CONSULTANTS WANTED



P. Murphy & Associates, Inc.
4405 RIVERSIDE DRIVE, SUITE 100
BURBANK, CA 91505
(818) 841-2002 (714) 552-0506
FAX: (818) 841-2122

Sales

REGIONAL SALES MANAGER LASER OPTICAL PRODUCTS

Atlanta, GA Area

Pioneer Communications of America, Inc., a subsidiary of Pioneer Electronic Corporation, has an immediate opening in its Laser Optical Products Division.

The ideal candidate will have :

- BSEE or equivalent technical experience preferably with a Bachelors Degree.
- Working knowledge of industry, computers, optical disk products, or related products.
- Prior sales experience with corporate customers
- Demonstrated ability to work on confidential projects.
- Excellent communication and demonstration skills.
- Working knowledge of computer/peripheral distribution channels.

We offer an outstanding compensation package including base salary, commission, bonus, company car and benefits. For immediate consideration send or fax us your resume and salary history, in confidence, to: **Pioneer Communications of America, Inc., Attn: T. Patricola, Manager Human Resources, 600 East Crescent Avenue, Upper Saddle River, NJ 07458. Fax number is: (201)327-9379. We will be interviewing at COMDEX in Las Vegas on November 14th & 15th. We are an equal opportunity employer.**

 **PIONEER**

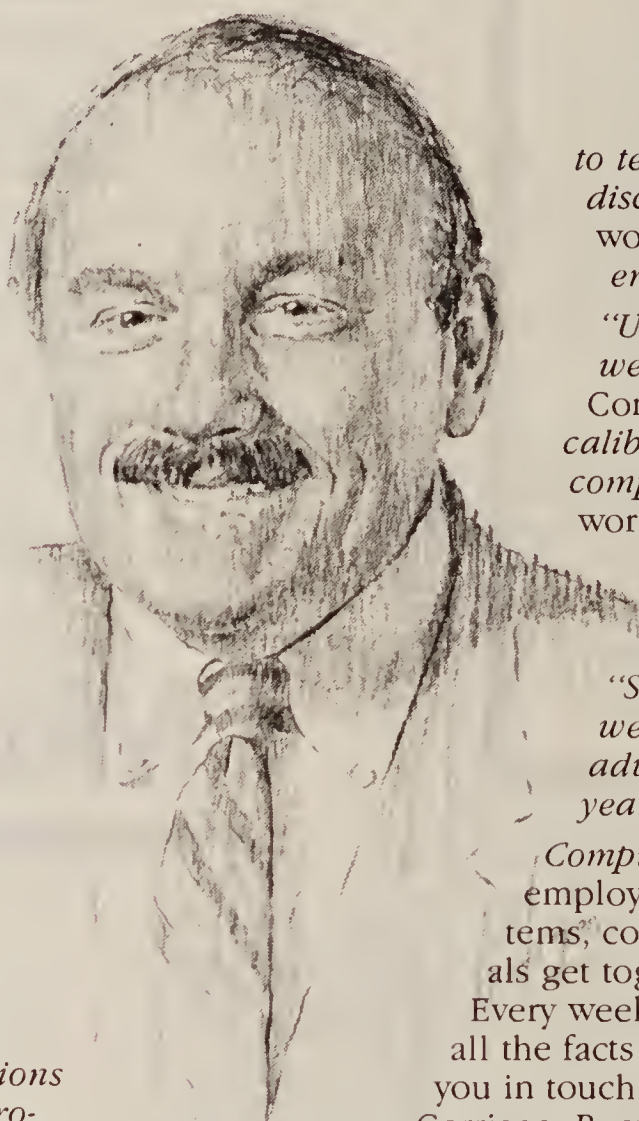
“Even compared to leading dailies, Computerworld generally draws a bigger and better pool of candidates.”

Edward J. Wisnewski
Vice President
Manager of Staffing Programs
BankAmerica Systems Engineering
Bank of America

It's no wonder Edward Wisnewski's colleagues call him "mainframe." He's Vice President/Manager of Staffing Programs for BankAmerica Systems Engineering (BASE), the information systems division of the \$100 billion Bank of America. Overseeing staffing for systems, from PCs to minis to mainframes — he's a man with a big job.

“Centralized in Concord, California, BASE is responsible for systems and software development, contract negotiations, procurement, and computer-related equipment expenditures in support of the bank's business systems worldwide. Our division alone employs 4,500, so building and maintaining a top-notch staff is no small task. We recruit as many as 600 professionals every year, and we get lots of help from Computerworld.”

“We have our own training program for filling entry-level positions, but generally we need to find systems programmers, applications programmers, systems analysts, and LANs programmers in the mid and upper ranges, with five



to ten years of experience in specific disciplines. That's why Computerworld's audience of qualified computer professionals is perfect for us.

“Unlike other trade publications we've looked at or even advertised in, Computerworld delivers the type and caliber of professionals we need. Even compared to leading dailies, Computerworld generally draws a bigger and better pool of candidates. And that's important to us because we're generally looking to hire immediately.”

“Success. In one word, that's why we're running a lot more recruitment advertising in Computerworld this year than last.”

Computerworld. We're helping serious employers and qualified information systems, communications, and PC professionals get together in the computer community. Every week. Just ask Edward Wisnewski. For all the facts on how Computerworld can put you in touch with qualified personnel, call John Corrigan, Recruitment Advertising Director at 800/343-6474 (in MA, 508/879-0700).



COMPUTERWORLD

The weekly newspaper of record for computer professionals.

Boston: 375 Cochituate Road, Box 9171, Framingham, MA 01701-9171 (508) 879-0700
New York: Paramus Plaza I, 140 Route 17 North, Paramus, NJ 07652 (201) 967-1350
Washington D.C.: 8304 Professional Hill Drive, Fairfax, VA 22031 (703) 573-4115
Chicago: 10400 West Higgins Road, Suite 300, Rosemont, IL 60018 (312) 827-4433
Los Angeles: 18008 Sky Park Circle, Suite 145, Irvine, CA 92714 (714) 250-0164
San Francisco: 18008 Sky Park Circle, Suite 145, Irvine, CA 92714 (714) 250-0164

An IDG Communications Newspaper

SOFTWARE DESIGN/SERVICE

A KEY CONNECTION FOR CAREER GROWTH

Community Health Computing makes key connections for better healthcare delivery. CHC serves the "Who's Who" of the hospital community with innovative information systems. Since 1973, we have sought solutions for expanding data integration in medical facilities. Today, we stand on the brink of a new challenge. Be part of our commitment to provide the highest quality products and services as we prepare to enter new markets in hospital computerization.

SOFTWARE ENGINEERS

A BS degree in Computer Science (or equivalent) is required. 5+ years of proven leadership should include several of the following: large, complex commercial software products (using top down development and design methodologies) from concept to market; structured lifecycles; varied software environments (including transaction processing and multi-tasking); product component walk-through/inspections; C, Fortran, Pascal and PL/I. Also a plus is work with clinical application design and development, Stratus systems, integration testing design and execution as well as logical and relational database design.

CLIENT SERVICE REPRESENTATIVES

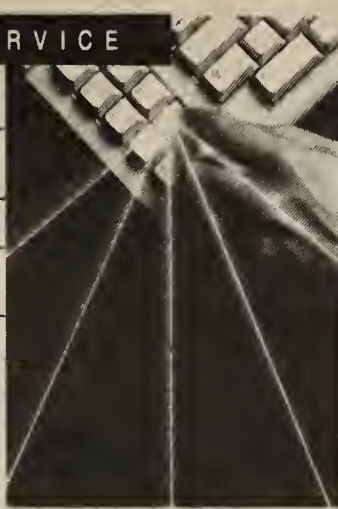
Work in one of two key areas to foster good CHC customer relations. Our first-line Client Service Representatives assist customers in solving software product problems requiring immediate attention. Our second line of software product experts assist in more in-depth investigations. For both of these positions, we prefer 3-5 years experience in healthcare and computerization.

Be a vital member of our team in Houston—where the spirit of optimism is driving a comeback economy. You'll enjoy a highly affordable cost of living in a vibrant, international city. Our benefits include medical/dental insurance, flex account, tuition reimbursement, 401K and relocation assistance. Send your resume to:

COMMUNITY HEALTH COMPUTING
Director of Human Resources
5 Greenway Plaza, Suite 2000
Houston, TX 77046



An Equal Opportunity Employer



Software Project Coordinator: Coordinate and supervise a group of software engineers in the development of components for a large software system to support computer aided software engineering. Apply knowledge of database design and implementation, user-friendly graphical object-oriented interfaces, dataflow concepts, data structures, compiler construction, artificial intelligence, programming languages including C, C++, and assembly. Requirements are an M.S. in Computer Science, plus six months experience in the job offered or six months experience as a software engineer. Experience must include developing software to implement graphical object-oriented interfaces, in the design and implementation of a dataflow language based on graphical objects, and in the design and implementation of relational database management systems. Hours are 8:00 a.m. to 5:00 p.m., 40 hours per week. Salary is \$35,000 per year. Apply at the Texas Employment Commission, Austin, Texas, or send resume to the Texas Employment Commission, TEC Building, Austin, Texas 78778, Job Order #5424350. Ad paid for by an Equal Employment Opportunity Employer.

AS/400 PROGRAMMER/ ANALYST

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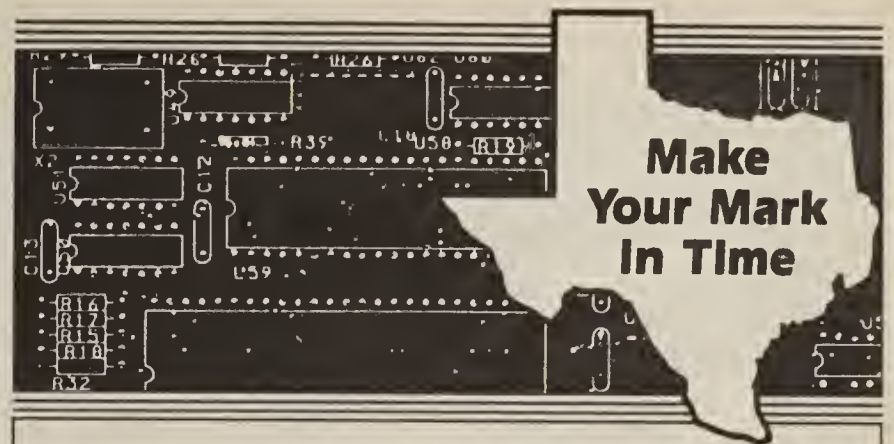
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Falling prey to a paper tiger

Toothless "shrink-wrap" licenses leave software vendors in a legal lurch

BY RAYMOND T. NIMMER
SPECIAL TO CW

Are mass-market software licenses worth the paper on which they are printed? Well, that depends on how much the paper costs.

Mass-market or shrink-wrap licenses are peculiar to the software industry and, within it, to that segment in which vendors sell their products by mail-order, over-the-counter or by other means designed to reach the mass market. In such cases, neither the purchaser nor the seller negotiates terms; the purchaser merely buys the product at the going rate.

For years, lawyers have advised software vendors to include these licenses with their products, knowing that their legal effect is questionable. These license agreements are probably unenforceable; simply put, they are not negotiated agreements but efforts by one side to impose terms on the other.

To my knowledge, there has not been one judicial decision that relied on a shrink-wrap li-

cense to give rights to a producer or take them from a user. The simple fact is that no software developer can rely on these papers in a major lawsuit, and if one ever did, his chances of success would not be great.

Two states, Illinois and Louisiana, enacted special laws validating shrink-wrap agreements. The Illinois law was repealed. Then, a federal court ruled that the Louisiana law was at least in part invalidated by federal copyright and patent law. The court assumed with very little discussion that a shrink-wrap license would be invalid as a contract. Most courts would agree with this decision.

You cannot have a contract without an agreement. You cannot have an agreement forced on you without even knowing its terms. This oversimplifies the matter, and many lawyers can come up with sophisticated rebuttals, but these principles describe the essential flaw in the effectiveness of many shrink-wrap licenses.

The license usually is not described to the buyer before he

purchases the package. Therefore, no one could say he agreed to the license at that time.

Later, when opening the package, the buyer already owns the copy of the program. But simply stating in a piece of paper that by using the product the buyer agrees to the terms of the license is humbug — unless such an agreement was made before or during the time of purchase.

What is the purpose?

Why do we have shrink-wrap agreements? What is their intended purpose?

The licenses routinely limit the warranty that the manufacturer makes regarding the software and the risk of liability it assumes if the program malfunctions.

Disclaimers and liability limitations have a long history in contract law and can work if they are conspicuous and become part of the actual bargain. Some shrink-wrap agreements may meet this description, but many cannot.

In some states, however, even if agreements were to meet these conditions, the mass-market disclaimers would still be ineffectual under consumer protection statutes.

In any case, the producer and

the seller cannot revoke warranties assuring that they sold you a merchantable product — one of ordinary quality — after the sale is completed.

The shrink-wrap agreements routinely limit the number of copies of the software the user can make. Here we have use of a pseudo-contract. While the license may not be effective, however, you cannot legally copy the software to your heart's content. Virtually all mass-market software is protected by federal copyright law that limits your right to copy.

Software secrets

Some licenses limit your right to reverse-compile or reverse-engineer the software and disclose or use the "secrets" you discover in doing so.

Even if we assume that there are secrets, a producer can get a contract from a buyer barring disclosure of secrets. But can it impose one? Most likely not. The U.S. Supreme Court said last year that the ability of a buyer to discover secrets from mass-market products is central to this country's system of intellectual property law.

So far, shrink-wrap agreements have been described from the perspective of the user. What about the producers? Should they use these agreements? The answer is often yes.

The licenses may not change or add to copyright restrictions, but they alert the buyer to copy-

right limits. Although they often will not alter warranties that declare software as merchantable, they create an argument that a buyer waived his rights by not objecting to the license. While they probably cannot eliminate the buyer's right to reverse-engineer the program, the license — coupled with some protections in the product — enables the producer to argue that its own employees are doing wrong if they steal secrets.

There we have it — an *Alice in Wonderland* approach to computer law. The licenses probably do not work, but the producer is better off with them than without them.

Nimmer is Foundation Professor of Law at the University of Houston, counsel to the law firm Sheinfeld, Maley & Kay and author of *The Law of Computer Technology* (Warren, Gorham & Lamont, New York).



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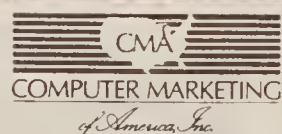
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XT Model 089	\$1,025	\$1,400	\$950
AT Model 099	\$1,500	\$1,775	\$1,500
AT Model 239	\$1,700	\$2,100	\$1,700
AT Model 339	\$1,825	\$2,000	\$1,700
PS/2 Model 50	\$1,525	\$2,000	\$1,500
PS/2 Model 60	\$2,700	\$3,300	\$2,500
Compaq Portable I	\$575	\$750	\$325
Portable II	\$1,350	\$1,700	\$1,350
Portable III	\$2,975	\$2,975	\$2,200
Portable 286	\$1,600	\$2,000	\$1,600
Plus	\$750	\$1,200	\$675
Deskpro 286	\$2,025	\$2,350	\$1,700
Deskpro 386	\$2,800	\$2,900	\$2,500
Apple Macintosh 512	\$550	\$650	\$300
512E	\$725	\$925	\$550
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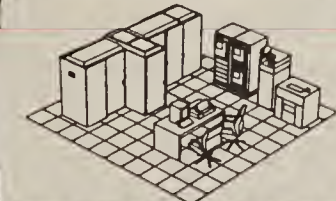


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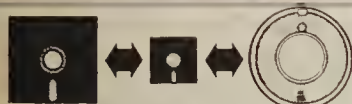
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To build or not to build?

Development costs weigh heavily when deciding to make or buy courses

BY BILL SEBRELL
SPECIAL TO CW

Many training managers and, more importantly, many training managers' bosses, erroneously believe that it is usually more economical to develop technical training courses than to buy them from a vendor. The only time they will use a vendor is when they back themselves into a corner timewise or send students one-at-a-time to public offerings.

There appear to be several reasons for this attitude. One is the mistaken belief that training is easy and that anyone can build and deliver a course. The managers look at the rates that vendors charge and are convinced that in-house costs must be lower. Most important, they do not know what their own training development costs really are, so they have nothing to compare with the market prices.

In-house training and development costs are considerable. If a developer knows the technology, understands instructional

design and has been trained in delivery techniques — all of which come at a significant cost — the average development requirements for delivery media are the following:

- Thirteen days for each day of classroom lecture.
- Four hundred hours for each hour of computer-based training instruction.
- Eight hundred hours for each hour of interactive video instruction.
- Twenty-six hours for each hour of tele-training.

If we assume that an average instructor costs \$40,000 for salary and benefits and works 220 days a year, each man-day of development costs \$181. The simplest training — a five-day lecture class — will cost the corporation \$11,765 (13 times five days multiplied by \$181). This ignores the costs of getting an instructor to the proper level of knowledge and experience.

There are some additional problems. The development cost

is strictly overhead — the instructor will not be teaching while developing. There may be little more than faith to go on regarding the quality or results of the effort until the course is delivered. The elapsed time is a full quarter of a year, assuming no delays or interruptions. The organization is dependent on the individual who develops the course unless or until some backup can be provided.

Taking all these issues into account, it is not surprising that estimates of the true costs of developing complex courses frequently run into the hundreds of thousands of dollars. With numbers of this kind, it makes economic sense to consider buying a course from a reputable vendor.

Delivering a course in-house is also an expensive proposition. Many people feel that instructors bring to their job just four basic qualities — a show business ego, presentation skills, communication skills and subject

matter expertise. They also assume that these attributes are all that one needs to ensure quality training. While these factors are certainly important, several others are also crucial, including preparation for classes, teaching skills, instructional design, student evaluation and student counseling.

All of these skills require constant honing and maintenance. Keeping abreast of the ever-changing subject matter and learning new technical material for the future are other areas to address. With experience indicating that instructors cannot be kept in the classroom more than about 110 days a year without a drop in performance, it is advisable to let them work on these issues. The problem is that doing so costs money.

When does it make sense to develop and deliver courses in-house? If a technology has been used in an organization for a significant time, it is worthwhile to consider in-house development and delivery of courses in that area. The reasons are fairly straightforward: There should be plenty of individuals with expertise. There is probably a wealth of well-structured material in books, manuals or existing courses that can be leveraged quickly, easily and cheaply. The

course requirements should be well known. The need for formal documentation and maintenance will be relatively modest. The number of students to be trained will likely be relatively small, and there should be plenty of follow-on resources if students need to ask questions.

Assuming that a company has people on staff with the right knowledge and experience, training that is heavily oriented to a company's individual procedures or practices is another excellent field for in-house development. It will cost a vendor as much as the user to develop a customized course. There is little likelihood that the vendor can recoup its costs and earn a profit by delivering the course to other clients. There is no incentive for a vendor to offer discounts to develop this kind of training, so it is unlikely that a company will find the bargains available with courses on generic topics.

Additionally, a basic philosophy of buying the best training available and building the remainder internally makes sense. It helps ensure that quality training will be delivered.

Sebrell is a vice-president at Data Base Management, Inc., a subsidiary of American Management Systems, Inc. in Manchester, Conn.



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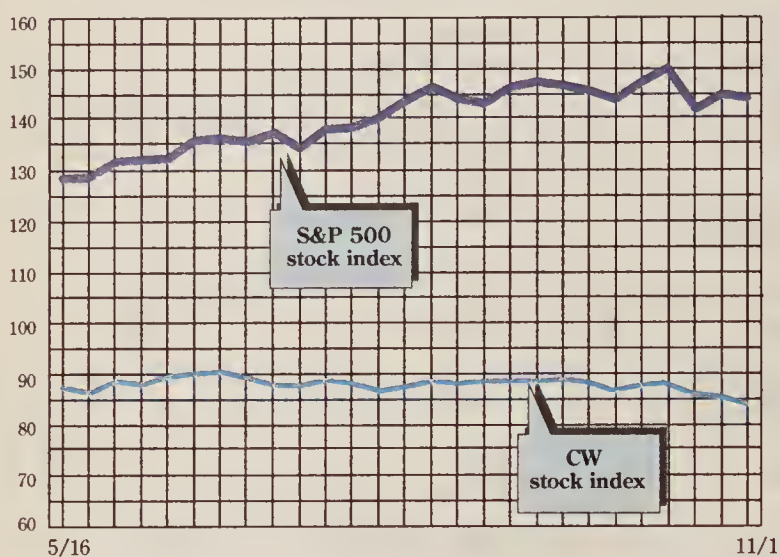
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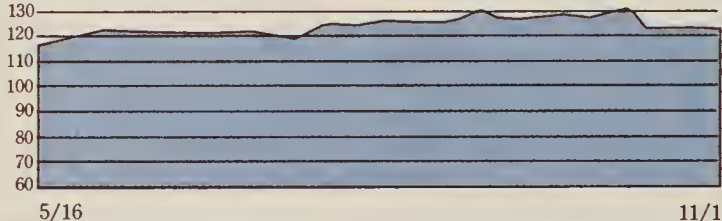
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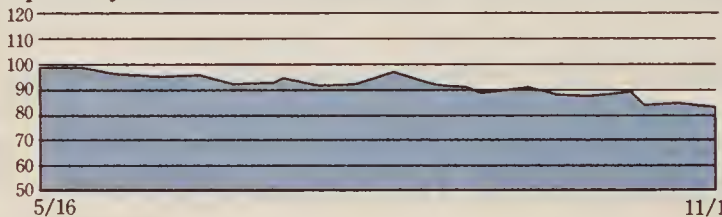


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Semiconductors	51.4	50.5
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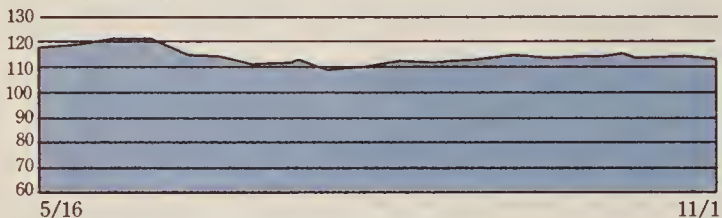
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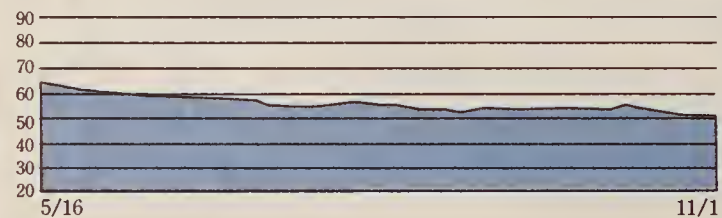
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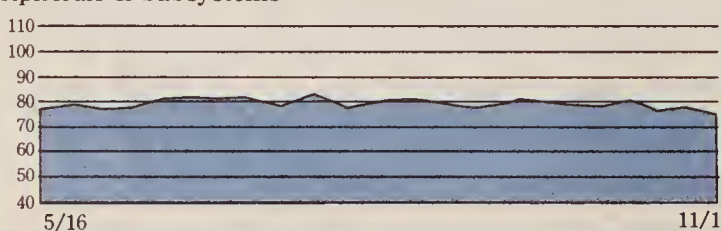
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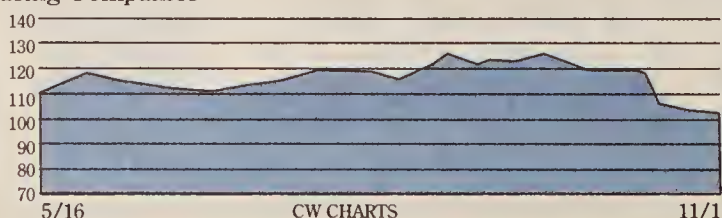
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Q	ANDREW CORP	26	16	23.75	0.0	0.0
Q	ARTEL COMMUNICATION CORP	9	2	6.125	-0.1	-2.0
N	AT&T	46	27	44	0.5	1.1
N	AVANTEK INC	7	4	4.875	0.1	2.8
N	AYDIN CORP	21	14	18.75	-0.9	-4.5
N	BELL ATLANTIC CORP	105	69	102.625	1.8	1.7
N	BELLSOUTH CORP	55	39	52.5	-0.9	-1.6
Q	COMPRESSION LABS INC	11	3	8.875	-0.3	-2.7
Q	COMPUTER NETWORK TECH	3	1	2.407	-0.1	-2.5
Q	CONTEL CORP	37	18	30.875	-2.4	-7.1
Q	DATA SWITCH CORP	6	2	2.75	0.5	22.2
Q	DIGITAL COMM ASSOC	26	17	19	0.6	3.4
Q	DYNATECH CORP	21	17	17.5	-0.4	-2.1
Q	FIBRONICS INTERNATIONAL INC	7	3	6.625	0.5	8.2
Q	GANDALF TECHNOLOGIES	7	4	5.75	-0.1	-2.1
N	GENERAL DATA COMM INDS	7	4	4.875	-0.1	-2.5
N	GTE CORP	67	42	64	1.1	1.8
N	INFOTRON SYS CORP	13	9	9.25	0.0	0.0
N	ITT CORP	65	48	59	0.6	1.1
N	MA COM INC	10	6	6.125	0.0	0.0
Q	MCI COMMUNICATIONS CORP	49	20	43.825	0.6	1.5
N	NETWORK EQUIPMENT TECH INC	28	14	25.75	-1.0	-3.7
Q	NETWORK SYS CORP	11	7	7.625	-0.4	-4.7
N	NORTHERN TELECOM LTD	23	14	22.875	0.4	1.7
Q	NOVELL INC	38	24	28.5	-1.0	-3.4
N	NYNEX CORP	84	65	79.25	0.4	0.5
N	PACIFIC TELESIS GROUP	47	29	43.25	-1.4	-3.1
A	PENRIL CORP	9	3	7.25	-0.6	-7.9
N	PLESSEY PLC	46	29	39.75	0.0	0.0
N	SCIENTIFIC ATLANTA INC	24	11	21.5	-0.4	-1.7
N	SOUTHWESTERN BELL CORP	59	39	55	-2.5	-4.3
Q	3 COM CORP	29	10	11	-1.8	-13.7
N	U S WEST INC	75	55	69.125	-0.8	-1.1

Computer Systems

Q	ALLIANT COMPUTER SYS	7	3	6.25	-0.1	-2.0
Q	ALPHA MICROSYSTEMS	8	5	5.125	0.1	2.5
A	ALTOS COMPUTER SYS	9	6	8	0.1	1.6
Q	AMDAHL CORP	23	12	11.875	-0.5	-4.0
Q	APPLE COMPUTER INC	50	34	46.125	-0.4	-0.8
N	BOLT BERANEK & NEWMAN	13	7	8.875	-0.8	-8.3
N	COMPAQ COMPUTER CORP	113	52	106	-2.6	-2.4
N	COMMODORE INTNL	20	7	7.5	-0.1	-1.6
Q	COMPUTER AUTOMATION INC	7	3	2.875	0.0	0.0
N	CONTROL DATA CORP	24	16	18	-0.8	-4.0
Q	CONVEY COMPUTER CORP	16	9	14.875	-0.9	-5.6
N	CRAY RESH INC	66	33	38	3.9	11.4
Q	DAISY SYS CORP	8	1	1.5	0.0	0.0
N	DATA GEN CORP	20	14	14.25	0.1	0.9
N	DATAPoint CORP	8	3	5	-0.4	-7.0
Q	DELL COMPUTER CORP	12	6	5.75	-0.8	-11.5
N	DIGITAL EQUIP CORP	122	85	92.75	2.5	2.8
N	FLOATING POINT SYS INC	4	1	1.875	0.0	0.0
N	HARRIS CORP	40	25	37.125	-0.5	-1.3
N	HEWLETT PACKARD CO	62	46	46.5	-4.0	-7.9
N	HONEYWELL INC	92	57	82.75	-0.3	-0.3
N	IBM	131	98	100	-1.9	-1.8
Q	INFORMATION INTL INC	18	12	12.25	0.0	0.0
Q	IPL SYS INC	9	4	6.625	-0.6	-8.8
N	MAI BASIC FOUR INC	14	3	3.75	-0.5	-11.8
N	MATSUSHITA ELEC IND LTD	204	158	163.25	-1.0	-0.8
N	MENTOR GRAPHICS CORP	22	12	16.25	-0.1	-0.8
N	NBI INC	3	1	0.938	-0.2	-16.6
N	NCR CORP	67	51	61.375	2.8	4.5
N	PRIME COMPUTER INC	21	7	7.5	-0.6	-7.7
Q	PYRAMID TECHNOLOGY	20	9	17	0.3	1.5
Q	SEQUENT COMPUTER SYS INC	38	16	38	1.3	3.6
Q	SHAREBASE CORP	4	0	0.563	0.0	0.0
Q	SILICON GRAPHICS CORP	27	14	24.75	-1.0	-3.9
Q	STRATUS COMPUTER	35	21	22.75	0.0	0.0
Q	SUN MICROSYSTEM INC	23	13	16.875	-0.9	-4.9
Q	SYMBOLICS INC	3	1	1.625	-0.2	-10.4
N	TANDEM COMPUTERS INC	26	15	24.125	-1.8	-6.8
N	TANDY CORP	49	38	42.625	-1.4	-3.1
N	ULTIMATE CORP	12	7	8.375	0.0	0.0
N	UNISYS CORP	31	15	15.125	-2.4	-13.6
A	WANG LABS INC	11	5	5.5	-0.1	-2.2

Software & DP Services

Q	ADOBE SYS INC	30	14	16.75	0.0	0.0
Q	AMERICAN MANAGEMENT SYS INC	19	11	13.625	-0.1	-0.9
Q	AMERICAN SOFTWARE INC	23	9	22.375	0.4	1.7
N	ANACOMP INC	9	4	4.625	0.8	15.8
Q	ANALYSTS INTL CORP	20	8	17.75	-0.5	-2.7
Q	ASHTON TATE	28	9	10	-1.3	-11.1
Q	ASK COMPUTER SYS INC	18	7	7.5	-0.8	-9.1
N	AUTO DATA PROCESSING	51	38	46.5	-2.3	-4.6
Q	AUTODESK INC	44	23	39	-0.8	-1.9
Q	BMC SOFTWARE INC	28	9	26.5	-0.5	-1.9
N	BUSINESSLAND INC	15	10	9.5	-0.5	-5.0
N	COGNOS INC	9	5	4.75	-0.1	-2.6
N	COMPUTER ASSOCIATES INTL INC	22	12	12.5	-0.4	-2.9
Q	COMPUTER HORIZONS CORP	11	7	8.5	-0.6	-8.8
N	COMPUTER SCIENCES CORP	56	44	52	1.8	3.5
N	COMPUTER TASK GROUP INC	16	10	11.75	0.5	4.4
Q	COMSHARE INC	42	19	35	-0.3	-0.7
Q	CORPORATE SOFTWARE	16	9	9.75	-0.3	-2.5
N	GENERAL MTRS (CLS E)	56	39	54.625	2.4	4.5
Q	HOGAN SYS INC	7	4	5.25	0.0	0.0
Q	INFORMIX CORP	14	7	13	-0.8	-4.8
Q	INTELLICORP INC	6	3	4.875	-0.4	-7.1
Q	LEGENT CORP	32	18	27.75	-0.9	-3.1
Q	LOTUS DEV CORP	34	17	31	-1.3	-3.9
Q	MANAGEMENT SCI AMER	12	6	10	-0.6	-5.9
Q	MICROSOFT CORP	86	22	82.125	2.4	3.0
Q	NATIONAL DATA CORP	35	19	31	0.0	0.0
N	ON LINE SOFTWARE INTL INC	8	5	8.125	0.0	0.0
N	ORACLE SYS CORP	26	8	24	-1.6	-6.3
N	PANSOPHIC SYS INC	18	12	13.5	0.0	0.0
Q	PHOENIX TECHNOLOGIES INC	19	3	4	0.8	23.1
Q	POLICY MGMT SYS CORP	37	22	33.5	0.4	1.1
Q	PROGRAMMING & SYS INC	21	14	20.75	0.5	2.5
Q	RELATIONAL TECHNOLOGY INC	16	5	4.875	-0.9	-15.2
N	REYNOLDS & REYNOLDS CO	34	20	25	0.1	0.5
Q	SAGE SOFTWARE INC	11	6	10.125	0.8	6.6
Q	SEI CORP	20	16	18.5	0.0	0.0
Q	SHARED MED SYS CORP	19	13	12.875	-1.4	-9.6
Q	SOFTWARE PUBG CORP	31	16	26.375	-0.1	-0.5
A	STERLING SOFTWARE INC	9	5	7.875	0.4	5.0
Q	SUNGARD DATA SYS INC	22	13	20	-0.9	-4.2
Q	SYSTEMATICS INC	40	26	36.25	-0.5	-1.4
N	SYSTEM CENTER INC	26	14	19	-1.8	-8.4
N	SYS. SOFT INC	30	14	25.5	-1.8	-6.4
Q	WORDSTAR	3	2	1.938	0.4	24.0

Semiconductors

N	ADV MICRO DEVICES INC	11	7	7.625	-0.5	-6.2
N	ANALOG DEVICES INC	13	9	9.25	0.8	7.2
Q	ANALOGIC CORP	11	7	9.625	0.0	0.0
Q	CHIPS & TECHNOLOGIES INC	28	11	21	-1.3	-5.6
Q	INTEL CORP	35	19	33.25	0.4	1.1
Q	MICRON TECHNOLOGY INC	26	10	10.375	-0.9	-7.8
N	MOTOROLA INC	83	36	55.625	-0.3	-0.4
N	NATL SEMICONDUCTOR	10	7	7.5	-0.1	-1.6
N	TEXAS INSTRS INC	47	30	32.125	-0.4	-1.2
A	WESTERN DIGITAL CORP	15	6	7	-0.4	-5.1

Peripherals

Q	ALLOY COMP	3	1	1.375	-0.4	-21.4
N	AM INTL INC	6	5	5	0.0	0.0
N	AST RESH INC	11	7	10	-1.0	-9.1
Q	AUTO TROL TECH CORP	6	4	3.75	0.0	0.0
Q	BANCTEC INC	20	9	13.5	-1.0	-6.9
Q	CIPHER DATA PRODS INC	11	4	5.25	0.5	10.5
A	COGNITRONICS CORP	8	2	7.375	0.4	5.4
Q	CONNOR PERIPHERALS	16	7	14.125	-0.8	-5.0
A	DATAPRODUCTS CORP	18	8	8.625	-0.5	-5.5
A	DATARAM CORP	12	7	8.75	-0.1	-1.4
N	EASTMAN KODAK CO	52	42	44.5	0.0	0.0
N	E M C CORP MASS	6	3	3.75	0.3	7.1
Q	EMULEX CORP	12	5	6.625	0.0	0.0
Q	EVANS & SUTHERLAND	25	14	20.5	-1.0	-4.7
Q	ICOT CORP	3	1	1.375	0.0	0.0
Q	INTERLEAF INC	10	6	6.25	0.0	0.0
Q	IOMEGA CORP	5	2	3.188	-0.3	-7.3
Q	LEE DATA CORP	4	1	1.5	0.1	9.1
Q	MASSTOR SYS CORP	4	2	2.75	0.0	0.0
Q	MAXTOR CORP	12	7	9.75	-0.3	-2.5
Q	MICROPOLIS CORP	9	3	3.625	-0.3	-6.5
Q	MINISCRIBE CORP	9	1	1.563	-0.7	-29.6
N	MINNESOTA MNG & MFG CO	80	59	72	-0.6	-0.9
Q	PERSONAL COMP PRODUCTS INC	6	4	4.125	0.0	0.0
Q	PRIMAR CORP	2	0	0.125	-0.3	-66.7
Q	PRINTRONIX INC	10	7	10.125	0.5	5.2
N	QMS INC	12	6	10.375	-0.6	-5.7
Q	QUANTUM CORP	17	4	11.25	-1.3	-10.0
Q	RECOGNITION EQUIP INC	13	6	6.5	-0.4	-5.5
Q	REXON INC	8	6	7	0.8	12.0
Q	SEAGATE TECHNOLOGY	16	7	12.875	-0.1	-1.0
N	STORAGE TECH CORP	23	9	13.5	0.3	1.9
Q	TANDON CORP	2	0	0.938	-0.2	-16.6
N	TEKTRONIX INC	24	17	17.875	-0.6	-3.4
Q	TELEVIDEO SYS INC	1	0	0.344	-0.1	-21.5
N	XEROX CORP	69	54	58.5	-1.1	-1.9

Leasing Companies

Q	AMPLICON INC	115	11	11.5	-0.5	-4.2
N	CAPITAL ASSOC INTNL INC	9	4	4.625	-0.1	-2.6
N	COMDISCO INC	34	19	30.375	-0.5	-1.6
Q	CONTINENTAL INFO SYS	4	0	D.344	0.0	0.0
Q	LDI CORPORATION	18	12	17.375	-0.4	-2.1
Q	PHOENIX AMERN INC	5	3	3.75	-0.1	-3.2
Q	SELECTERM INC	9	5	7	0.0	0.0

Henson back in business — at Legent

BY NELL MARGOLIS
CW STAFF

VIENNA, Va. — Joe M. Henson, who surprised the industry this time last year when he resigned from the chief executive officer's post at Prime Computer, Inc., donned the CEO mantle once more last week — this time at Legent Corp.

Henson began his tenure immediately after the announcement late last Thursday. He was also named chairman of the systems software firm created by the March 1989 merger of Duquesne Systems, Inc. and Morino Associates.

As an outside director of Legent, Henson took a strong role in the postmerger integration of the two companies with common customers but disparate product lines and corporate cultures [CW, Oct. 30].

Former Legent Chairman Mario Morino and former Legent CEO Glen Chatfield will remain actively involved in the company, they told *Computerworld* last week. In addition to serving on the board's executive committee, Chatfield will direct

its finance and audit committee. Morino will head the finance committee and will also serve as director of Legent's mergers and acquisitions program, which was targeted from Legent's inception as key to its growth.

Morino said last week that Henson's role as the driving force behind Prime's late 1987 acquisition of Computervision Corp. as well as the subsequent purchase of General Electric Co.'s Calma division were significant factors recommending him to Legent.



Henson, tired of golf, re-joins work force

While regarded as a bold move at the time, Prime's difficulty in assimilating Computervision was a frequently cited major cause of the slowed growth that, according to many analysts, kept the company from reaching its \$2 billion goal, contributed to Henson's departure and ended in Prime being sold to private ownership.

The Henson administration saw Prime grow from a \$350 million entrepreneurial company into a \$1.7 billion player. Legent, too, has charted a high-growth course, according to its principals. In a rapidly consoli-

dating industry, Henson said, Legent has a strong chance to move to the forefront.

While aiding in the integration of Morino and Duquesne, "I became increasingly excited about software and its future," said Henson, 56, whose roots — 27 years at IBM and seven at Prime — are in hardware. "Maybe, in all honesty, I just became increasingly disenchanted with playing golf five days a week."

Legent's changing of the guard came as a total surprise to most analysts. "The company has positioned this as a natural evolution, and in a way, you can see where they're going," said one analyst who requested anonymity.

He added that he expected Morino's and Chatfield's diminished roles to disturb some of his peers, however.

"I think [the executive switch] will raise a question of what's going on at Legent," said Robert Kanter, an analyst at Legg Mason Marsten, Inc. "I'm surprised that the stock hasn't budged."

Kanter added, however, that he has no indication that anything is amiss at Legent. "Their growth rate is terrific, their earnings, their strategy. You keep asking, can a merger of equals really work? So far, it looks like it can."

CIM

FROM PAGE 1

James C. Weinberg, partner in charge of manufacturing industry. By comparison, he said, experienced and successful CIM users tend to see it — and its associated technologies — as a subset of the corporation's overall business strategy.

The emphasis on the shop floor is underscored by which position in the company is responsible for CIM implementation. Nearly half the companies sur-

veyed rely on manufacturing executives to fill that role, according to KPMG, which said only chief executives "have the span of management control required to integrate CIM across functions and across companies."

The perceived floundering of U.S. manufacturers, observers said, is the result of an over-reliance on technology as a substitute for old-fashioned strategic planning. While some warned that U.S. manufacturing continues to lag behind its Japanese and European counterparts — both in how quickly and how effectively it puts information technologies to work — others saw reason for optimism.

"Before, manufacturing saw CIM as a way to control their system's destiny and keep IS in the back room," said Roger Willis, a partner at Andersen Consulting. During the next decade, however, manufacturing will explore CIM as a way to "integrate people, vendors and customers, not just Computer A with Computer B," he added. This will, in turn, bring on the realization that "IS has a valuable role to play as experts in information technology," Willis said.

Some companies have already reached this conclusion. Ferno Washington, Inc., a Wilmington, Ohio, manufacturer of ambulance cots and stretchers,

is implementing a work-measurement system that would bring shop-floor control systems under the coordination of Manufacturing Accounting and Production Information Control System, or MAPICS, IBM's combination of manufacturing resource planning, production control, accounting, marketing and scheduling system.

The project has encountered resistance but is being pushed through by a close cooperation between IS and engineering departments, according to George M. Reazer, Ferno Washington's

Circuit switching made simpler for SNA nets

BY ELISABETH HORWITT
CW STAFF

WHITE PLAINS, N.Y. — IBM announced a new version of its Systems Network Architecture ACF/VTAM software last week with enhancements designed to improve the communications system's ability to handle "casual" circuit-switched connections.

ACF/VTAM Version 3 Release 3, with availability dates ranging from December through mid-1990, includes enhancements said to allow VTAM hosts to communicate directly with one another over multiple channel-based and circuit-switched connections. The MVS/ESA version can also improve performance up to 50% on a very large SNA network, IBM said.

While comparable features had been available on IBM's 3725 and 3745 communications processors via the latest release of IBM's Network Control Program (NCP), the VTAM release provides the capabilities without a front-end processor.

This is critical to users of 4300 and 9370 systems, whose built-in communications processors do not run NCP, according to David Passmore, a partner at Ernst & Young subsidiary Network Strategies, Inc.

Among the enhancements available on the new VTAM re-

lease are the following:

- The ability for a host to support up to 16 transmission groups (channel-based links) to an adjacent subarea (host or front-end processor).

This enables users to build parallel channel-to-channel host connections that can support T1 speeds of 1.5M bit/sec. or even T3 speeds of 45M bit/sec., Passmore said.

Multiple channel connections between a 3090 host and a 3745 can effectively double the front-end processor's throughput, an IBM spokesman said.

- NCP Version 5 Release 3, with enhanced Token-Ring support, including multiple polling of workstations on the local-area network from a 3174 and enhanced backup capability through the use of dual Token-Ring couplers. Availability is scheduled for December.

- Support of IBM's Type 2.1 (formerly called PU2.1) on VTAM, which enables hosts to act as T2.1 nodes directly rather than through their front-end processors.

- The ability for VTAM hosts to talk to other VTAM hosts, or to adjacent NCP nodes, via "casual" or circuit-switched connections via the T2.1 protocols. This eliminates the need to go through the complex setup routines typically required for circuit-switched host connections.

director of engineering.

Those barriers pose one of the biggest obstacles to CIM implementation, according to Hales. "Plant people do not like to be told from on high how to architect their systems, while IS often feels victimized by users' requests for variety and uniqueness" in shop floor systems.

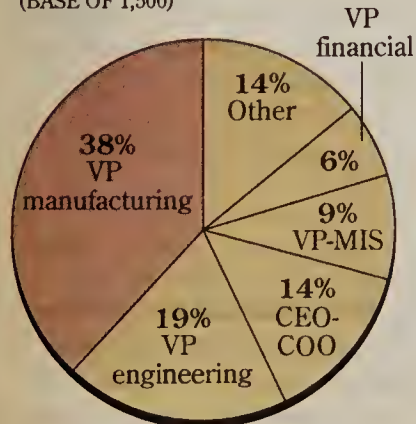
Allen H. Michels, chairman of Stardent Computer, Inc. in Newton, Mass., said he was "pro-

foundly confused and disquieted at the deadly slowness of the adoption of new design methods" by U.S. companies. Michels said Japanese companies — which accounted for 40% of the high-end workstation sales of the recently merged Ardent Computer Corp. and Stellar Computer, Inc. — "spare no expense" when giving their design engineers the best available workstation technology.

Responsible party

CIM project teams most commonly report to manufacturing executives, according to a survey of 1,500 people in manufacturing companies

PERCENT OF RESPONDENTS
(BASE OF 1,500)



SOURCE: KPMG PEAT MARWICK
CW CHART: FRANK C. O'CONNELL

Integration means war at Autofact

The CIM wars escalated at last week's Autofact conference, with major consulting, software and computing firms introducing tools designed to help minimize the expense of integrating multi-vendor systems across various manufacturing areas.

Major vendors introduced their respective CIM platforms, along with tools and alliances designed to integrate such systems with other vendors' manufacturing automation offerings.

Digital Equipment Corp. announced an agreement to market its Ultrix-based workstations cooperatively with

Systems Strategies, Inc.'s Ezbridge/Ultrix, software said to provide links between Ultrix systems and IBM hosts. A future LU6.2-based connection is likely, a spokeswoman said.

IBM and Unisys Corp. announced agreements to integrate their CIM systems with Intercim Corp.'s Factory Floor series of software, which is said to provide factory information management based on SQL database technology.

Meanwhile, major consulting firms demonstrated tools designed to complement their CIM expertise in making users' inte-

gration projects go smoothly.

Andersen Consulting is expanding its closed-loop manufacturing resource planning system, Mac-Pac, to include "off-the-shelf integration" tools for tying in other manufacturing areas, said Roger Willis, director of CIM at Andersen Consulting. The firm has linked Mac-Pac to McCormack & Dodge Corp.'s financial software, Millennium, as well as to a procurement system internally developed by an aerospace company. Links to the shop floor are made through Andersen's Cell-Pac.

ELISABETH HORWITT

AT&T may relax grip on Unix

BY AMY CORTESE
CW STAFF

NEW YORK — Glasnost may have come to Unix.

Robert Kavner, president of AT&T's Data Systems Group, said last week that he is considering selling off equity interests in Unix Software Operation (USO), AT&T's software arm, particularly to members of Unix International and the Open Software Foundation (OSF).

"I believe for some OSF members, this is an attractive element," Kavner noted.

The disclosure came as AT&T and its Unix International alliance of partners gathered at the Unix Expo to officially announce AT&T Unix System V, Release 4.

Putting the feelers out

Kavner said AT&T was in conversation with a number of OSF companies, to see "if we can have one implementation or a strong collaboration." Although he said he did not know where those conversations would lead, he hinted that equity interest in USO might be one outcome.

OSF members seemed encouraged by the proposition. Even Ken Olsen, Digital Equipment Corp. president and founding member of OSF, was in a benevolent mood, telling reporters that if USO is spun off, there will "hopefully" be no reason for the two groups to be separate.

"We love AT&T. It's not AT&T; it's because [Unix] is controlled by a vendor," Olsen said.

"If AT&T wants to spin off USO, certainly that's an opportunity for the industry as a whole," said David Tory, OSF president.

Although OSF, a nonprofit organization, would not have the wherewithal to take AT&T up

cludes advanced functionality, such as multiprocessing and enhanced security. Tory characterized the planned OSF/1 as a new-generation architecture, beyond what is provided by USO. OSF is meeting this week to review development plans, but current estimates put availability of OSF/1 around the end of the summer.

In the meantime, products based on the new release of AT&T Unix System V will start hitting the streets early next year, as computer and software vendors complete work on porting to the new release.

With Release 4, application binary interfaces have been developed for major architectures from Intel Corp., Motorola, Inc. and Sun Microsystems, Inc. platforms, as well as the AT&T 3B platform, which allows for shrink-wrapped software applications.

AT&T Unix System V, Release 4 merges elements of the major versions of Unix — Xenix, University of California at Berkeley's Unix and AT&T Unix System V. Applications written for any of those versions will be upwardly compatible, according to officials. Release 4 is also compliant with X/Open Consortium Ltd. standards.

According to Unix International, 172 companies plan to support the new release.



SETH RESNICK

AT&T's Kavner may sell off equity interests in Unix Software Operation

on such an offer, "member companies might," Tory said.

Indeed, many of the issues that led to the OSF alliance seem to have been resolved already.

Unity in mind

One of the primary reasons OSF was created was to help bring unification in the Unix industry, according to Tory. "We would look with great opportunity" on anything that might help achieve this goal," he said.

OSF plans to leapfrog the newly released AT&T Unix System V, Release 4 with a Unix implementation of its own that in-

X/Open to adopt SAA interface as standard

BY AMY CORTESE
CW STAFF

NEW YORK — In a surprising move designed to interconnect the open systems world with the large base of IBM systems, standards group X/Open Consortium Ltd. announced last week that it has licensed IBM's Common Programming Interface for Communications (CPIC) and will adopt it into its standards specifications.

The CPIC is part of IBM's Systems Application Architecture and defines communications services for Advanced Program-to-Program Communications, known as LU6.2.

The decision to license the IBM interface was based on feedback from users at a meeting held by X/Open in Montreal last spring.

"A lot of users told us they

want to go to open systems but don't know how to get from here to there," said Michael Lambert, X/Open's chief technical officer. "A key requirement is to be able to retrieve information from an enterprisewide database from an open systems environment."

Peer-to-peer pressure

For instance, a server on a mainframe could communicate with an application in an open systems environment on a peer-to-peer level.

Under terms of the agreement, users and developers are now free to use the interface without requiring a license or any type of negotiations with IBM.

An IBM spokesman said it was a reasonable assumption that IBM will most likely implement the interface in its AIX systems.

Informix revs OLTP engine

BY ROBERT MORAN
CW STAFF

NEW YORK — Informix Software, Inc. last week announced that it has replaced its Informix-Turbo database engine with a fault-tolerant version for large on-line transaction processing (OLTP) applications under the Unix operating system.

According to the company, the software, called Informix-Online, will perform tasks three to five times faster, replace its predecessor and offer the fault-tolerant ability to automatically replicate transactions on two disks.

Along with Online, the company announced Informix-Star, distributed database software that will permit users to access and manipulate data from Informix databases on multiple remote servers.

Informix-Star supports both Transmission Control Protocol/Internet Protocol and Stargroup communications protocols com-

Users come looking for answers at Unix Expo

BY AMY CORTESE
CW STAFF

NEW YORK — This year, not only is it OK to say the U-word, but some corporate IS managers are finding it may be risky not to. Last week's Unix Expo drew many first-time attendees who came to see if Unix can deliver on the promise of open systems.

Michael Farrell, a project manager at Citicorp's Information Management Services, Inc. (IMS), said he came to find out, "What does Unix really buy us that we don't already have?"

So far, though, Farrell said he has not been persuaded to invest in it. Despite claims of portability, "applications are not portable across Unix operating systems today," Farrell maintained.

Fitting in

IMS, a Citicorp start-up group, has the advantage of building its systems from scratch. "They will have to be multivendor," Farrell said. "We want to make sure everything will fit in."

Another Unix newcomer was Gary Lehr, a staff specialist in Du Pont Co.'s information systems department and member of a corporate open systems task force. Du Pont is not currently a large user of Unix, but "we want to get away from proprietary; open systems is the only way to go," Lehr explained.

However, Lehr said software applications for Unix were lacking. "It's coming along, but it's

not yet like the PC-DOS world," he said.

Several companies attempted to change that perception last week with the following introductions:

• Unify Corp.'s Accell/Net software for distributing applica-



tions written with Accell/SQL across a network. Accell/Net is available immediately at prices ranging from \$4,500 to \$120,000. Additionally, the firm announced an Accell/SQL interface to allow current Accell/SQL applications to run Open Look on X Window System workstations.

• SAS Institute, Inc.'s first Unix version of the SAS System software. The software, slated to be available in the second quarter of 1990, will run on Digital Equipment Corp. reduced instruction set computing workstations running Ultrix and will use Decwindows.

• Wordperfect Corp.'s new version of its word processing software for Unix systems, which will handle graphics as well as text.

• NCR Corp.'s announcement of Tower Network, a licensed version of Novell, Inc.'s Portable Network for Unix systems. Oracle Corp. claimed that it will have a beta-test version of its SQLnet for Oracle Version 6 on the market for use with Tower Network in January.

vice-president and MIS director at Clark Bartis, Inc. in Dallas, currently uses Informix Turbo on a Sequent Computer Systems, Inc. processor. With Informix Online, he said, he will attach an erasable optical drive to the Sequent computer and store executable transactions in the large data files for a critical application.

McLaughlin said he anticipates an 80% performance improvement. "We can now do archiving on-line and cross-query on multiple devices," he said.

Online and Star will be available by the end of the year on Unix-based AT&T 3B, Hewlett-Packard Co. HP 9000 300 and 800 series, Sequent and Sun Microsystems, Inc. computers and will be ported to other Unix platforms in the first quarter of 1990, the company said.

Turbo users under maintenance will receive a no-cost upgrade to Online. Prices are based on machine class and within each class on the number of users. Online development systems range in price from about \$3,000 to \$90,000, the company said.

Integrity problems

Other methodologies use pointers within the database to files outside of the database, which can cause integrity problems and disqualify their use for large applications such as image processing.

"In imaging applications, if you lose the pointers, you have basically lost the image as well as the integrity of the database," said Michael Goulde, director of image management at BIS CAP International, a consultancy in Norwell, Mass.

Jerry McLaughlin, assistant

Windows make Microsoft Word shine

BY PATRICIA KEEFE
CW STAFF

BOSTON — Click and drag. Those two words pretty much summed up the improved ease of use claimed by Microsoft Corp. in its release of Word for Windows last week.

The \$495 next-generation Word — described as “significantly improved” by one user and a “whiz-bang product” by an analyst — should give competitors some cause for fright, observers said. It is slated to ship in January.

Key to the revamped program is the ability for users to execute functions without having to go to a menu or even exit the screen or application.

Simple steps

As demonstrated last week, many executions required little more than point, click and drag. For example, using Microsoft's Dynamic Data Exchange protocol to link Excel and Word for

Windows, a change in price made in one package was automatically updated on the spreadsheet without touching the keyboard.

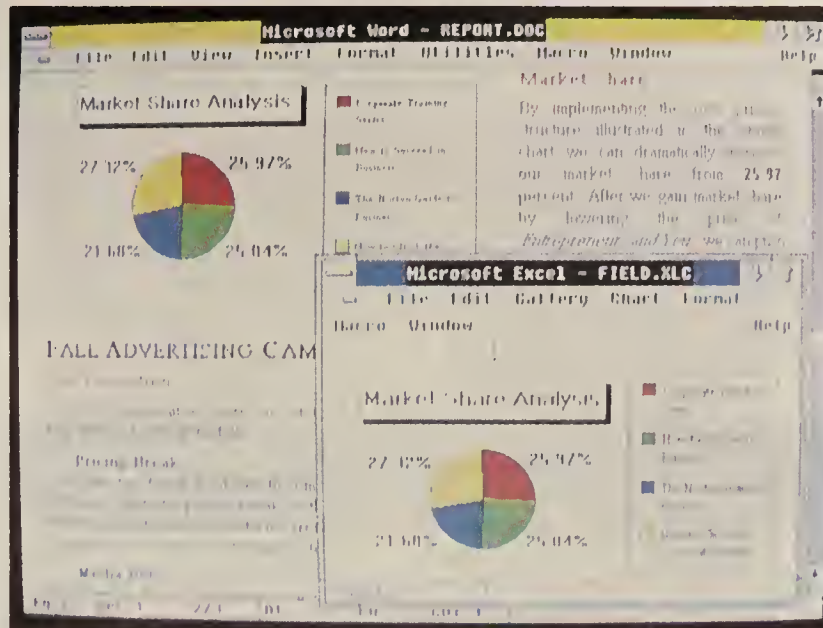
Microsoft is not just pitching a graphical word processor; it is pitching Word as an environment for the 1990s.

“Word processors are evolving into tools that are integrated in with other office systems and applications,” Microsoft Chairman Bill Gates said.

Vendor demo

To bolster that positioning, Microsoft invited a handful of vendors with products featuring hooks into Word for Windows to the demonstration.

“Instead of using the C prompt or Windows as your base level, [they want you to] use Word as your primary environment,” said Nancy McSharry, an analyst at International Data Corp., a market research firm in Framingham, Mass. “It's a reasonable strategy. It'll make things easier for users, and it'll



Point, click, drag: three keys to Word for Windows

make [competitors] sweat a little,” she predicted.

Word for Window is “an exceptionally good” word processor, said Arthur Block, vice-president of End-User Automation Support, but that is not what won a 2,000-unit order from Manufacturers Hanover

Trust Co. in New York, which has about 1,500 Word users.

“We really look to Word for Windows as a development platform,” Block said. “One of the beauties of using Word or Excel for development is that your platform is protected,” he said, explaining that both packages

use the same macro language under Windows and OS/2.

A technology manager at a Fortune 50 company also backs the idea of the application as the environment.

“We selected our first generation [of character-based] PC applications on individual functionality. What counts [today] is consistency and ease of use.” As his firm moves to Windows 3.0, he expects “the traditional, mainline, shrink-wrapped” character-based software to become a casualty.

McSharry issued a word of caution to users. She noted that Word for Windows runs in 640K bytes, but Microsoft recommends use of extended memory. It also suggests users have between 1M and 3M bytes of random-access memory (RAM), yet her demo ran with 6M bytes of RAM.

Using Windows to interface with a number of other applications will require between 1M and 3M bytes of memory, Microsoft said. “The proof of the pudding will be how well it runs on a 640K [byte Intel Corp. 80286],” McSharry said.

Oracle, Gupta add fuel to SQL Server fires

BY PATRICIA KEEFE
and CHARLES VON SIMSON
CW STAFF

The pace quickened on the low-end SQL server front last week as both Oracle Corp. and Gupta Technologies, Inc. returned Microsoft Corp.'s fire by separately announcing delivery dates for their respective database servers and releasing audited SQL benchmarks.

Oracle also leveled charges that Microsoft's SQL Server was closed. Microsoft, in turn, dismissed the charges as “non-sense.”

Microsoft fired the first shot in the hotly contested battle when it shipped SQL Server, its database engine, and an audited benchmark in September.

Oracle unwrapped its database engine, Oracle Server, for OS/2. It is priced at \$2,499 and available now.

Claiming to have the first “open” database server under OS/2, Oracle detailed features such as portability to more than 80 operating systems; connectivity to most major local-area network protocols and transparent access to other databases, including IBM's DB2 and SQL/DS and Digital Equipment Corp.'s RMS.

As expected [CW, Oct. 30], Umang Gupta unveiled Version 4.0 of his firm's database server, along with plans for gateways to Oracle Server and IBM's OS/2 Extended Edition Data Manager. Gupta also plans to provide enhanced connections to IBM's DB2 database software and port its server to a Unix-based Sun Microsystems server.

Both vendors released benchmarks audited by database consultants that they claim successfully pit their servers against Microsoft's SQL Server.

Masterpiece

FROM PAGE 1

Inventory Control will contain “bug fixes” instead of promised functionality.

- Promises to offer versions for the IBM Application System/400 and Digital Equipment Corp. VAX with functional parity to the mainframe releases have been eliminated.
- CA was deliberately unclear about the changes to the user base.

In late April, CA announced the Master Host Environment (MHE), a backbone that would supply I/O calls to permit users to develop applications with a single set of code and port those applications to IBM mainframes and Digital Equipment Corp. and IBM midrange processors. In June, the company announced that it was replacing the MHE and instead would rely on the CA-Datcom/DB database management system to drive Masterpiece modules.

“The base of the Master Host Environment was not strong enough to hold the place of the

General Ledger,” said MHE beta-test user Betty Azzolini, manager of systems at Channel Home Centers, Inc. in Whippany, N.J. “I therefore agree with CA's decision to hook the software modules to the Datacom/DB.”

Nevertheless, Azzolini said that CA's communications to the general population of Masterpiece users “left a great deal to be desired.”

Strong feelings

Others sounded a stronger note. Hollis Ezell, assistant controller at Avondale Mills in Sylacagua, Ala., and the user group's steering committee chairman for fixed assets, said, “CA did not make the scope of the changes clear, hoping nobody would hear it.”

CA sent Morse a statement, reading, in part, “Among the significant enhancements for the IBM and compatible mainframe versions of Masterpiece 2.0 are the inclusion of the relational database management system to strengthen the data management foundation of the system and simultaneously provide more powerful operational performance.”

Ezell said that CA has renamed General Ledger Release 7.1 as Release 2.0. — a move he said was “kind of like a bait and switch.” Ezell said many General Ledger users were expecting account number support to be increased from 24 to 30 positions. CA's Clayton responded that 30-position account numbers would be in the next release.

According to John Tower, the user group's steering committee chairman for CA-Accounts Pay-

able and financial project leader at Alfa-Laval, Inc. in Fort Lee, N.J., CA had promised that CA-Accounts Payable would be able to handle all of the state sales-use tax and federal 1099 reporting as well as other performance issues. Clayton said that functionality, mandated by law, will be contained in Masterpiece 2.0, which will be available around April 1990.

CA purchased the Masterpiece software in 1986 from Software International, Inc. According to Tower, CA promised the additional functions in late 1987, in 1988 and again in 1989, but in June 1989, it announced that it was scrapping everything and shifting to CA-ABS.

“Now we are going to wait for functionality that by our estimates and theirs will not arrive until 1991,” Tower said.

Pete Secor, financial analyst at Fashion Institute of Technology in New York, praised the ABS product but said that bringing ABS up to the level of Masterpiece software will require considerable development. “ABS is a real fine system for the smaller user — but you can't run 100,000 invoices on it because of its [limited] facility for batch collection,” he said.

Secor said that the fate of Masterpiece for both DEC and IBM AS/400 users will likely be addressed in a CA position paper in January 1990, which will contain directions for a so-called Masterpiece 3.0.

CA's Wasilko said Masterpiece versions for the AS/400 and the DEC VAX will use the same set of code as the mainframe products, but their 2.0 releases will be staged.

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TRENDS

IBM

4381

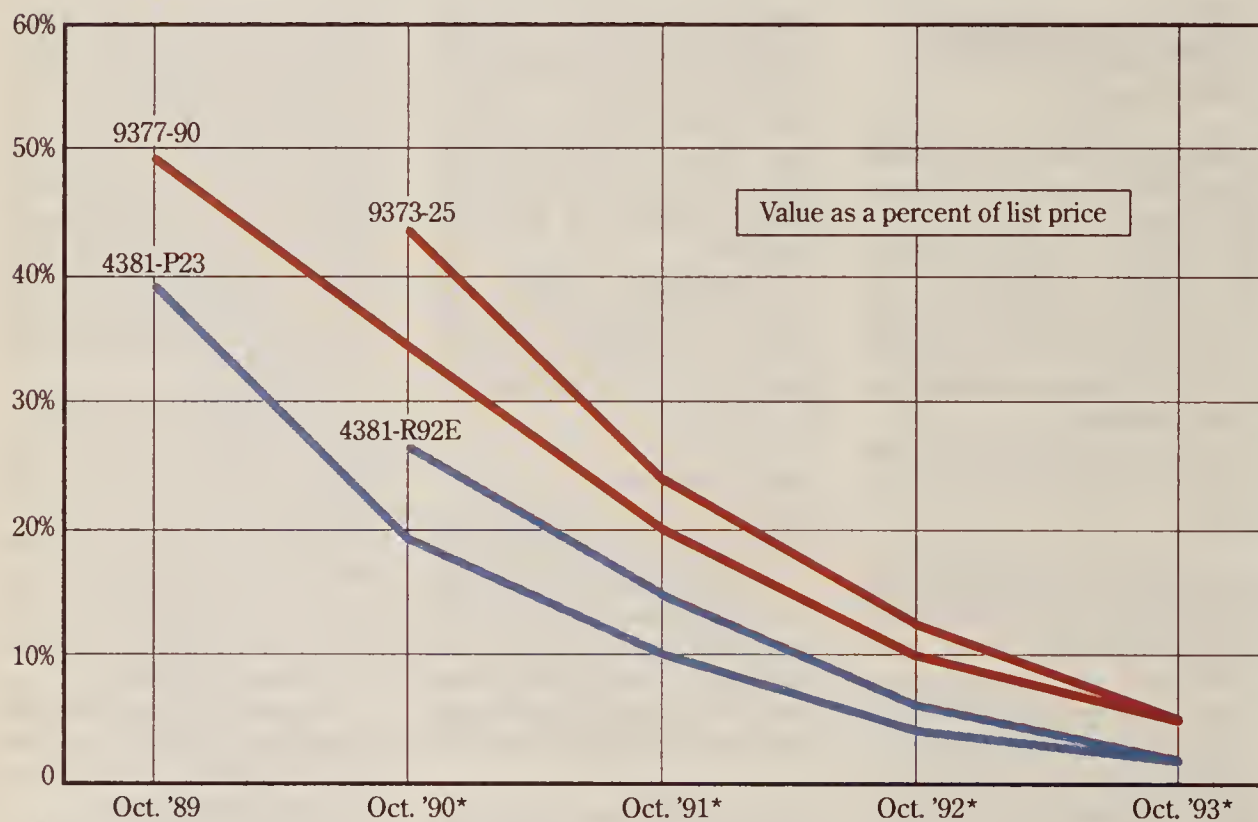
9370

The rumors of a replacement system for both the 4381 and 9370 machines have forced Computer Economics, Inc.'s residual value projections to decline sharply.

Most users of the 4381 family machines are ready for IBM to announce a replacement for the series. Until that time, users will simply add more memory and storage to their existing configurations. Sales for the 9370 series continue at their usual modest pace.

Model	List price in thousands	Residual value in thousands				
		Oct. '89	Oct. '90*	Oct. '91*	Oct. '92*	Oct. '93*
4381-P14	\$683	\$145	\$49.9	\$14	-	-
4381-P23	\$559.5	\$220	\$107.4	\$53.7	\$22.9	\$8.4
4381-P90E	\$398.1	-	-	\$60.5	\$28.7	\$11.5
4381-R92E	\$949.6	-	\$259.2	\$144.3	\$68.4	\$28.5
9373-25	\$34	-	\$14.6	\$8.2	\$4.2	\$1.8
9375-50	\$75.3	-	\$29.9	\$17.2	\$8.9	\$4.1
9377-90	\$232.7	\$115	\$78.6	\$45.4	\$24.2	\$11.9

When IBM does announce its new series, the "9500" family — which should be out by this time next year — prices for both the 4381 and 9370 will take a considerable plunge.



*Projected

SOURCE: COMPUTER ECONOMICS, INC., CARLSBAD, CALIF.

CW CHARTS

N E X T W E E K

If information systems personnel are frustrated, there's good reason. The layering-on of technology in American business — particularly in the office — has not increased productivity at all. So says MIT's Lester Thurow in an exclusive *Computerworld* interview in Manager's Journal.



DAVID LEIFER

The chasm between IS and end users is wide and deep. Proliferation of desktop computers has punctuated this division, and attempts to bridge the gap have largely failed. But, there is light at the end of this tunnel, and new avenues of managing end-user computing seem to be working. See the Special Report on end-user computing.

INSIDE LINES

IBM debates 'Tastes great!' 'Less filling'

The concept of a scaled-down OS/2 Presentation Manager running under DOS has the PC industry in a tizzy, and there's even evidence that factions within IBM are warring over PM Lite. Sources say the DOS camp has entertained presentations in the last week by several companies, including Netherlands-based Cyco and Rational Technologies, the DOS Extender people owned by Lotus. Rational and Cyco reportedly have pieces of the technology required to build a "light" PM. These IBMers are said to be mulling a midsummer introduction. A user who said he has been briefed expects an announcement one way or the other within a few weeks. The OS/2 adherents within IBM are said to favor a scaled-down version of OS/2, with perhaps 250 application programming interfaces, instead of 700.

Perils of international business

Russell Hoffman, head of P11 Enterprises, a small PC software company in Bridgeport, Conn., has received dozens of letters from Iran — many of them with almost identical wording — inquiring about the P11 tutorial authoring software. Hoffman has been sending out demo disks, but he is beginning to suspect that the letter-writing campaign is some form of harassment, since the Iranians are not actually buying the package. Hoffman is worried about offending the writers, especially in light of Iran's new law, which allows Iranians to hunt down Americans anywhere in the world and put them on trial.

The two amigos

We hear Apple is busy ripping apart Amigas these days and actually employs a number of original Amiga developers. It seems that Apple is particularly interested in Amiga's "Blitter," a coprocessor used to process graphics, video and animation. Just the thing for multimedia applications. Apple is allegedly developing a series of coprocessors, which will be used in part to provide multitasking — all of which brings us to unconfirmed reports that Apple is pressuring Motorola for either custom versions or specific enhancements to the 68040 and 88000 chips, thus delaying both.

Could you jump start my tank, please?

Prime was appalled to discover that its attention-getter at last week's Autofax show — a full-sized tank designed by the vendor's Cadds4X software — was dead on arrival because someone forgot to turn off the computer systems while the thing was trundling its way to Detroit. Prime's solution? It called AAA, of course, which reportedly was able to jump start the vehicle (that is, recharge the dead battery) in a trice.

Mach gaining speed

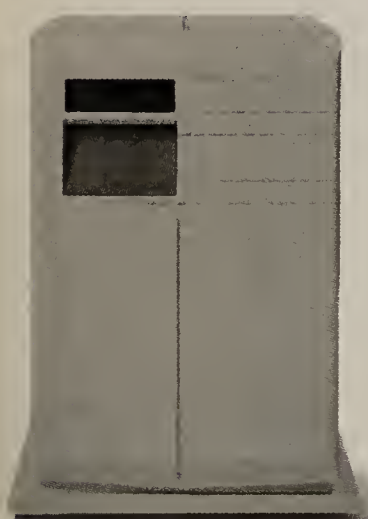
Although the Open Software Foundation claims it has yet to determine whether technology from the Mach operating system will supplement AIX as the base for OSF/1, the decision seems to be a done deal. Even an IBM representative, addressing a gathering at IBM's booth at Unix Expo, claimed that AIX was chosen by OSF as "one of the technologies" that would make up OSF/1.

Setting off Sparcs

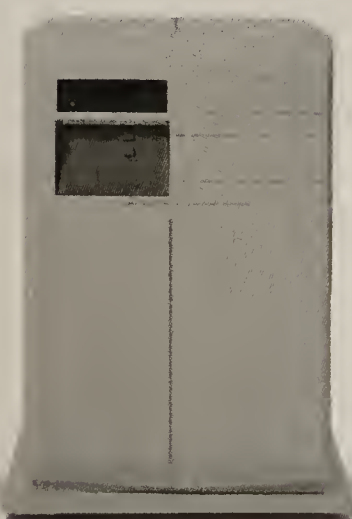
Sun's Sparc RISC-based architecture will get a boost at Comdex/Fall '89 when Tatung introduces a workstation based on the design. Sources at the Taiwanese company say the new model will be capable of providing 15 MIPS of processing power for around \$7,000. Despite a steadily growing list of supporters, only Sun and Solbourne have yet to ship Sparc-based machines.

Techworld in Washington, D.C., is having some trouble attracting enough high-tech vendors to fill up the showroom and office space designed to attract federal buyers. So, the developers have turned to wooing real estate firms, law firms, federal agencies and anyone else with a checkbook. But Techworld does have one ingredient for success in Washington: a sound-proof auditorium designed to accommodate top-secret classified meetings. If your vendor opts for that approach, the hot line remains open here, with News Editor Pete Bartolik standing by at 800-343-6474 to spill the beans.

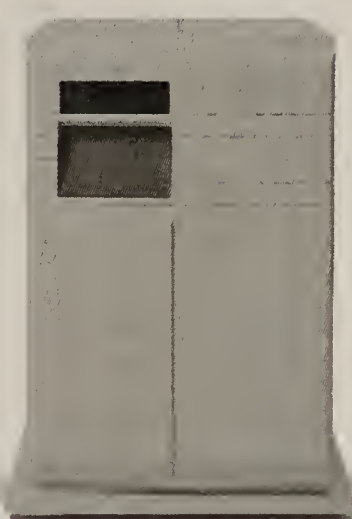
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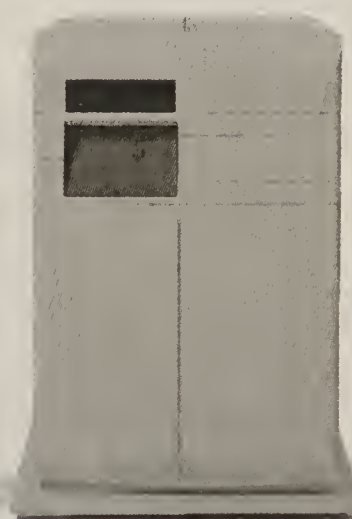
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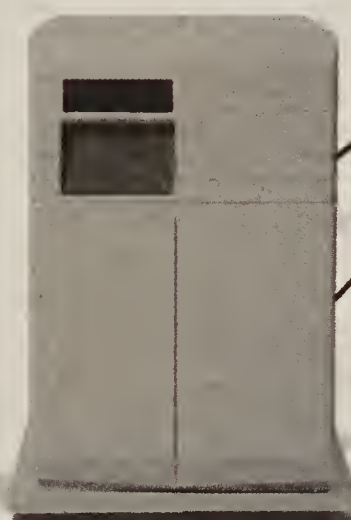
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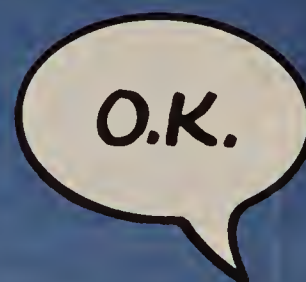
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